

Service Service Service



Service Manual

Contents

	Page
1 Technical Specifications, Connections, and Chassis Overview	2
2 Safety Instructions, Maintenance, Warnings, and Notes	5
3 Directions for Use	7
4 Mechanical Instructions	10
5 Service Modes, Error Codes, Fault Finding, and Repair Tips	13
6 <i>Block Diagrams, Test Point Overviews, and Wiring Diagram</i>	
Block Diagram Video	19
Block Diagram Audio	20
Power Lines Overview	21
I ² C-IC Overview	22
Testpoint Overview Audio Amplifier	23
Testpoint Overview Power Supply	24
Testpoint Overview SCAVIO Panel	25
Wiring Diagram	26
7 <i>Electrical Diagrams and PWB lay-outs</i>	<i>Diagram PWB</i>
Audio Amplifier: DC Protection(Diagram A1)	27 34-35
Audio Amplifier: Filters(Diagram A2)	28 34-35
Audio Amplifier: Left High(Diagram A3)	29 34-35
Audio Amplifier: Left Low(Diagram A4)	30 34-35
Audio Amplifier: Right High(Diagram A5)	31 34-35
Audio Amplifier: Right Low(Diagram A6)	32 34-35
Audio Amp: Supply + DC Prot.(Diagram A7)	33 34-35
LED/Switch Panel(Diagram LD)	36 37
LED Panel Display(Diagram LD)	38 39
SCAVIO: Function Blocks(Diagr. SC1)	40 55-60
SCAVIO: Sync Selection(Diagr. SC2)	41 55-60
SCAVIO: Video Select.ion(Diagr. SC3)	42 55-60
SCAVIO: Video ADC(Diagr. SC4)	43 55-60
SCAVIO: Video Select. Decoder(Diagr. SC5)	44 55-60
SCAVIO: VGA Input(Diagr. SC6)	45 55-60

Contents

	Page
SCAVIO: Control Functions 1(Diagr. SC7)	46 55-60
SCAVIO: Control Functions 2(Diagr. SC8)	47 55-60
SCAVIO: Scaler Clock Gen.(Diagr. SC9)	48 55-60
SCAVIO: PW Scaler + Memory(Diagr. SC10)	49 55-60
SCAVIO: Back-End EPLD(Diagr. SC11)	50 55-60
SCAVIO: Back-End LVDS Out(Diagr. SC12)	51 55-60
SCAVIO: Audio Source Select.(Diagr. SC13)	52 55-60
SCAVIO: Audio Processor(Diagr. SC14)	53 55-60
SCAVIO: Audio Delay Line(Diagr. SC15)	54 55-60
VGA Connector Panel(Diagr. VGA)	61 62-63
8 Electrical Alignments	65
9 Circuit Descriptions	68
List of Abbreviations	79
10 Spare Parts List	81
11 Revision List	89

©Copyright 2003 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.



1. Technical Specifications, Connections, and Chassis Overview

1.1 Technical Specifications

1.1.1 Picture

Display	: SDI plasma panel
Screen size	: 42" (106 cm)
Resolution	: 852 x 480 pixels (pixel pitch 1.095 x 1.11 mm)
Contrast ratio	: 1000 : 1

1.1.2 Sound

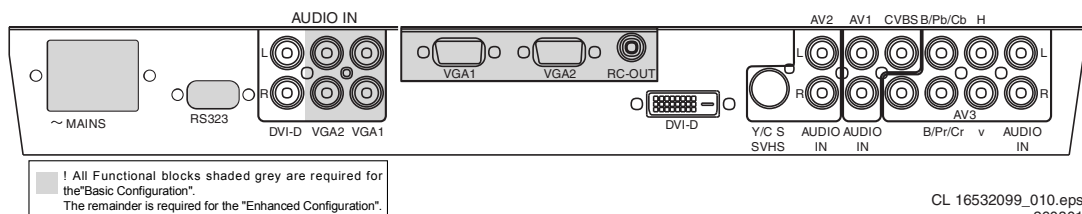
Maximum power	: 30 Wrms (for version with speakers)
---------------	---------------------------------------

1.1.3 Miscellaneous

Mains voltage	: 95 - 264 V
Mains frequency	: 50/60 Hz
Ambient temperature	: + 5 to + 40 deg. C
Maximum humidity	: 90% R.H.
Power consumption	: around 380 W
Standby Power consumption	: < 2 W
Weight	: 35 kg
Dimensions (WxHxD)	: Speakered version: 1215 x 657 x 90 mm
	: Speaker-less version: 1070 x 660 x 90 mm

1.2 Connections

1.2.1 Rear Connections



CL 16532099_010.eps
260801

Figure 1-1 Rear Connections

RS232

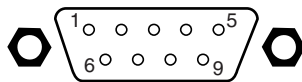


Figure 1-2 RS232 connector (subD-9p)

VGA1 - In

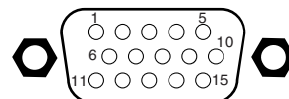


Figure 1-3 VGA Connector

1 -		
2 - TXD	(UART)	⊕→
3 - RXD	(UART)	⊕→
4 - RL_ICN	(ICONN)	⊕→
5 -	Ground	⊕→
6 - GL_ICN	(ICONN)	⊕→
7 - LD_ICN	(ICONN)	⊕→
8 - IR_TX	(ICONN)	⊕→
9 - IR_RX	(ICONN)	⊕→
10 -	Ground	⊕→
11 -	Ground	⊕→

Audio - In (DVI-D)

1 - Audio - L	0.5 Vrms / 1 kΩ	⊕→
2 - Audio - R	0.5 Vrms / 1 kΩ	⊕→

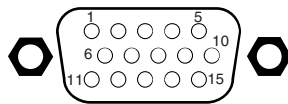
Audio - In (VGA2)

1 - Audio - L	0.5 Vrms / 1 kΩ	⊕→
2 - Audio - R	0.5 Vrms / 1 kΩ	⊕→

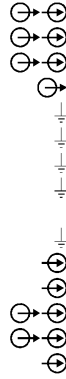
Audio - In (VGA1)

1 - Audio - L	0.5 Vrms / 1 kΩ	⊕→
2 - Audio - R	0.5 Vrms / 1 kΩ	⊕→

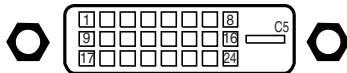
1 - Red	0.7 Vpp / 75 Ω	⊕→
2 - Green	0.7 Vpp / 75 Ω	⊕→
3 - Blue	0.7 Vpp / 75 Ω	⊕→
4 - TXD		⊕→
5 -	Ground	⊕→
6 - Red	Ground	⊕→
7 - Green	Ground	⊕→
8 - Blue	Ground	⊕→
9 - RC		⊕→
10 -	Ground	⊕→
11 - RXD		⊕→
12 - DDC_SDA		⊕→
13 - H-sync	0 - 5 V	⊕→
14 - V-sync	0 - 5 V	⊕→
15 - DDC_SCL		⊕→

VGA2 - Out

Figure 1-4 VGA Connector

1 - Red	(0.7 Vpp/75 Ω)
2 - Green	(0.7 Vpp/75 Ω)
3 - Blue	(0.7 Vpp/75 Ω)
4 - TXD	
5 -	Ground
6 - Red	Ground
7 - Green	Ground
8 - Blue	Ground
9 -	
10 -	Ground
11 - RXD	
12 - DDC_SDA	
13 - H-sync	0 - 5 V
14 - V-sync	0 - 5 V
15 - DDC_SCL	


RC - Out

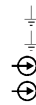
1 - RC


DVI-D

Figure 1-5 DVI-D Connector

1 - RX2-	
2 - RX2+	
3 -	Ground
4 -	
5 -	
6 - DDC-SCL	
7 - DDC-SDA	
8 -	
9 - RX1-	
10 - RX1+	
11 -	Ground
12 -	
13 -	
14 - 5V_STBY_SW	
15 -	Ground
16 - 5V_STBY_SW	
17 - RX0-	
18 - RX0+	
19 -	Ground
20 -	
21 -	Ground
22 -	
23 - RXC+	
24 - RXC-	
C5 -	Ground


AV2: SVHS - In

1 - Y	Ground
2 - C	Ground
3 - Y	1 Vpp / 75 Ω
4 - C / 16:9	0.3 Vpp / 75 Ω


AV2: Audio - In

1 - Audio - L	0.5 Vrms/10 kΩ
2 - Audio - R	0.5 Vrms/10 kΩ


AV1: Audio/Video - In

1 - CVBS	1 Vpp / 75 Ω
----------	--------------



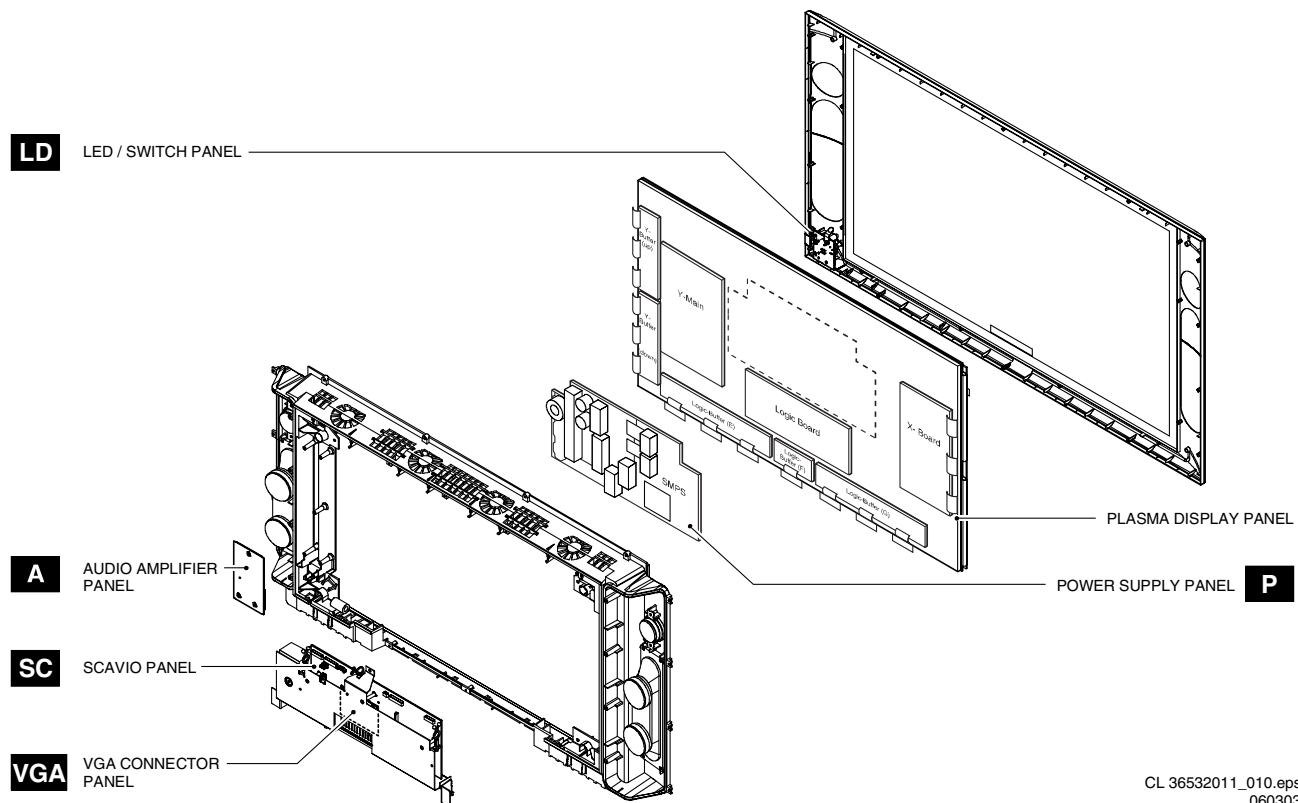
2 - Audio - L	0.5 Vrms / 10 kΩ
3 - Audio - R	0.5 Vrms / 10 kΩ


AV3: Audio/Video - In

1 - G/Y/Y	0.7 Vpp / 75 Ω
2 - B/Pb/Cb	0.7 Vpp / 75 Ω
3 - R/Pr/Cr	0.7 Vpp / 75 Ω
4 - H	
5 - V	
6 - Audio - L	0.5 Vrms / 10 kΩ
7 - Audio - R	0.5 Vrms / 10 kΩ



1.3 Chassis Overview



CL 36532011_010.eps
060303

Figure 1-6 PWB Location

2. Safety Instructions, Warnings, and Notes

2.1 Safety Instructions

Safety regulations require that **during** a repair:

- Connect the set to the mains via an isolation transformer (> 800 VA).
- Do not operate the monitor without the front glass plate. One function of this glass plate is to absorb IR radiation. Without this glass plate, the level of radiation could damage your eyes.
- Replace safety components, indicated by the symbol h, only by components identical to the original ones.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay, in particular, attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side (only for sets which have a mains isolated power supply):
 1. Unplug the mains cord and connect a wire between the two pins of the mains plug.
 2. Set the mains switch to the "on" position (keep the mains cord unplugged!).
 3. Measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
 4. Switch "off" the set, and remove the wire between the two pins of the mains plug.
- Check the cabinet for defects, to avoid touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ⚡). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

- Clean the glass plate in front of the plasma display with a slightly humid cloth. If, due to circumstances, there is some dirt between the glass plate and the plasma display, this must be cleaned by a qualified service engineer (see section "Mechanical Instructions").
- Measure the direct voltages and oscillograms with regard to the chassis ground ($\perp$), or hot ground ($\perp$) as this is called.
- The direct voltages and oscillograms shown in the diagrams are indicative. Measure them in the Service Default Mode (see section "Service Modes").

- Where necessary, measure the voltages in the power supply section both in normal operation (ⓘ) and in standby (Ⓢ). These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors

2.3.1 Schematic Notes

- All resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 Ω).
- All Capacitor values are expressed in Micro-Farads ($\mu = \times 10^{-6}$), Nano-Farads ($n = \times 10^{-9}$), or Pico-Farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.
- ?
- ?

2.3.2 Rework on BGA ICs

General

Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device removal

As is the case with any component, it is essential when removing an (LF)BGA that the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the chance of warping the PWB. To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area preparation

When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA. Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent. After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA. **Note:** Do not apply solder paste, as this has shown to result in problems during re-soldering.

Device replacement

The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers. To reflow the solder, apply a temperature profile according to the IC data sheet. So as not to damage neighbouring components, it may be necessary to reduce some temperatures and times.

- ?

3. Directions for Use

English

Unpacking and wall mounting instructions

For the unpacking instructions follow the illustrated steps printed on the packaging (outside and inside). For the wall mounting instructions follow the illustrated steps 4 to 6 printed on the separate leaflet.

Make sure that the wall mount is being fixed securely enough so that it meets safety standards. The weight of the monitor (excl. packaging) is about 3.5 kg.

Note: Stands are optional accessories. Consult your dealer.

Connect your electronic receiver box
See the separate supplied instruction manual with your receiver box.

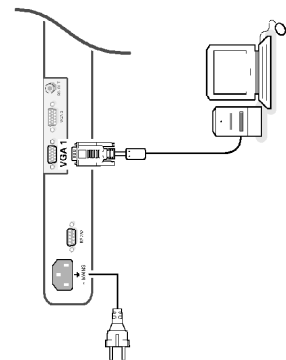
Connect your computer

To the receiver box
See the illustration in the inside front-cover of this handbook.

Connect one end of a VGA cable to the video card of the computer and the other end to the **VGA IN** connector at the rear side of the receiver box. Fix the connectors firmly with the screws on the plug.

Directly to the monitor

- 1 Connect one end of a VGA cable to the video card of the computer and the other end to the **VGA 1** connector at the rear side of the monitor. Fix the connectors firmly with the screws on the plug.



Monitor Display modes

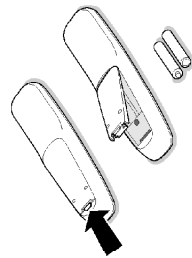
VGA	640x480	60, 72, 75, 85 Hz
Wide VGA	848x480	60 Hz
Wide VGA	852x480	60 Hz
MAC	640x480	66.67 Hz
MAC	832x624	74.55 Hz
MAC	1024x768	74.93 Hz
MAC	1152x870	75 Hz
SVG	800x600	56, 60, 72, 75, 85 Hz
XGA	1024x768	60, 70, 75, 85 Hz
SXGA	1280x1024	60, 72, 75 Hz

When a VGA computer is connected, the display selection is made automatically.
A message is displayed when the monitor does not support the connected VGA mode. Switch your computer to a correct display mode.

Operation

- 1 **Insert the mains plug** supplied into the mains inlet at the back of the monitor and in the wall socket.
For safety, please only use the supplied pin-earthed mains cord which has to be inserted in a grounded socket.

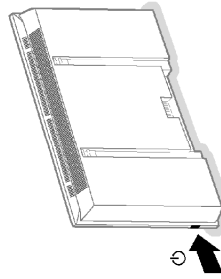
- 2 **Remote control:** remove the cover of the battery compartment.
Insert the 2 batteries supplied (Type R6/AA-1.5V).



The batteries supplied do not contain the heavy metals mercury and cadmium. Nevertheless in many countries batteries may not be disposed of with your household waste. Please check on how to dispose of batteries according to local regulations.

- 3 **Make sure that your electronic receiver box and/or PC are switched on and that your PC is in the correct display mode.**

- 4 **Switch the monitor on :** Press the on/off key  at the right side of the monitor.
A green indicator lights up and the screen comes on.



When the monitor does not receive a supported VGA signal and is not connected to a receiver box, the screen switches to standby and the red indicator lights up.

When you switch on your monitor **for the first time**, and the monitor is not connected to an electronic receiver box, the language menu automatically appears on the screen. The explanation appears in different languages one at a time.

Follow the instructions on screen to select the correct language or see Setup menu, Language, p. 5.

Use of the remote control

VGA to select your computer connected to the **VGA 1** connector

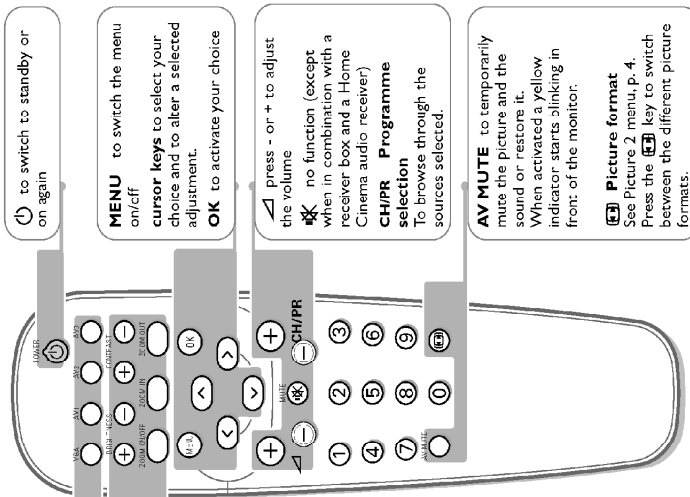
AV1, AV2, AV3 no function

BRIGHTNESS +/- to adjust the brightness level of the picture

CONTRAST +/- to adjust the contrast level of the picture

ZOOM ON/OFF to activate/de-activate the zoom function. See p. 4.

ZOOM IN/OUT to adjust the zoom factor and to change the magnification of the picture when zoom is activated. See p. 4.



If your monitor no longer responds to the remote control, the batteries may be exhausted.

How to dispose of batteries ?

The batteries supplied do not contain the heavy metals mercury and cadmium. Nevertheless in many countries batteries may not be disposed of with your household waste. Please ensure you dispose of batteries according to local regulations.

End of life directives

Philips is paying a lot of attention to produce environmentally-friendly in green focal areas. Your new monitor contains materials which can be recycled and reused. At the end of its life specialised companies can dismantle the discarded monitor to concentrate the reusable materials and to minimise the amount of materials to be disposed of. Please ensure you dispose of your old monitor according to local regulations.

Use of the menus and the menu system

Picture 1 Brightness
Contrast
Colour temp.
Sharpness

1 Press the **MENU** key on the remote control to summon the different menu headers.

2 Press the cursor left/right to move the cursor horizontally through the menu headers.

3 Press the cursor down to access the menu. In case of a slider, move the cursor left/right to adjust.

In case of a list with options, move the cursor right to enter and use the cursor up/down to select an option. Press the cursor left to leave the options list.

4 Press the **MENU** key again to switch off the menu.

Note: Sometimes not all the menu items are visible on the screen. Press the cursor down until all the items are displayed.

Only when the US English language has been selected (see Setup menu, language, p. 5), the menu items will be displayed with additional icons.

Operation

Press the **MENU** key on the remote control to summon the main menu.

Picture 1 menu

Picture 1
Brightness
Contrast
Colour temperature
Sharpness

Brightness

This control allows you to adjust the brightness level of the picture.

Contrast

This control allows you to adjust the contrast level of the picture.

Colour temperature

This control allows you to select the colour temperatures of the picture. Move the cursor up/down to make a selection. Press the cursor left to return to the Picture 1 menu.

Sharpness

This control allows you to adjust the edge definition of a picture.

Picture 2 menu

Picture 2
format
Zoom
Zoom factor
Shift
Clock frequency
Phase
Auto align



4:3



Wide screen

In this menu you are allowed to adjust attributes which are relevant for the picture on the display, like format, zoom, size, etc.

Format

Select **Format** to summon a list of available display formats for showing images in the traditional 4:3 proportions. Press the cursor up/down to select another display format: 4:3 or Wide screen.

Zoom

Select **Zoom On** to activate the zoom function.

You may also activate the zoom function with the **ZOOM ON/OFF** key on the remote control. Press the cursor left/right up/down to select which part of the screen will be zoomed.

Tips

Ambient temperature

Do not hang up the monitor above a central heating or other heating sources.

Care of the screen

Clean the anti-reflex coated flat glass screen with a slightly damp soft cloth. Do not use abrasives solvents as it can damage the glass surface of the screen.

Plasma Display characteristics

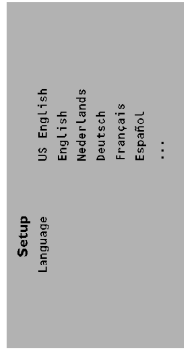
Caution: A video source (such as a video game, DVD, or video information channel) which shows a constant non-moving pattern on the screen, can cause damage to the screen. When your Flat-Monitor is continuously used with such a source, the pattern of the not-moving portion of the image permanently on the screen. When not in use, turn the video source **OFF**.

Regularly alternate the use of such video sources with normal viewing.

When switching over to another picture after having displayed the same still picture for a long time (many hours), it may happen that some parts from the previous picture will remain on screen due to a kind of memory effect. This ghost picture will disappear after some time. To avoid this effect change the pictures regularly or for PC use you can turn on a screen saver in your computer. For video signals, Philips has built in an automatic shift of the picture every 5 minutes to avoid this effect and to prolong the life of the screen.

Very incidentally and after a longer period of unuse (approx. 1 year) the screen may display some strange colour deficiencies. This is quite normal for plasma displays and these effects will

Setup menu



Zoom factor

Select **Zoom factor** and press the cursor left/right to adjust the zoom factor and to change the magnification of the picture. If zoom is not active, Zoom Off; changing the magnification factor will have no effect on the displayed picture.

Shift

This control allows you, when necessary, to move the picture in a horizontal or vertical way.

- 1 Use the cursor left/right to adjust.
 - 2 Press the **OK** key when done.
- Clock frequency**

This control allows you, when necessary, to adjust the values of the clock frequency so that especially text can be displayed with an optimal overall sharpness.

Use the cursor left/right to adjust.

Phase

This control allows you, when necessary, to adjust the pixel phase of the picture to avoid picture interference.

Use the cursor left/right to adjust.

Auto align

This control allows you to automatically adjust the shift, the clock frequency and the phase in VGA mode. Press **OK** to execute.

No picture or no sound

Are the supplied cables connected properly? (The power cable to the display, the VGA cables, the audio cables,...) Is your PC or receiver box switched on?

Do you see a black screen and the indicator on front of the monitor lights up green, this means that the display mode is not supported. Switch your VGA source to a correct mode.

If your problem is not solved: Switch your monitor off and then on again.

Never attempt to repair a defective monitor yourself. Check with your dealer or call a video technician.

Transport

Keep the original packaging to transport the monitor if needed.

Miscellaneous

- Ambient temperature: + 5 ~ + 40°C
- Maximum operating altitude: 2000 m (min. air pressure 800 hPa)
- Mains: Auto Voltage ranging from 95V to 264V 50Hz/60Hz around 380 W
- Power consumption: < 2 W
- Standby consumption: < 2 W
- Weight (excl. packaging): 35 kg
- Display: 107 x 66 x 9cm
- Dimensions (w x h x d): 107 x 66 x 9cm
- Wall mounting bracket included

Control of peripheral equipment

The infrared signals of the screen may influence the reception sensitivity of other peripherals. Solution: replace the batteries of the remote control or change position of other equipment. E.g. keep away a wireless headphones from within a radius of 1.5 m.

No stable or not synchronised VGA picture

Check if you have selected the correct VGA mode in your PC.

4. Mechanical Instructions

Index of this chapter:

- Service Position Monitor
- Rear Cover Removal
- Service Position Panels
- PDP and Glass Plate Replacement
- Re-assembly

Note: Figures below can deviate from the actual situation, due to different set executions.

4.1 Service Position Monitor

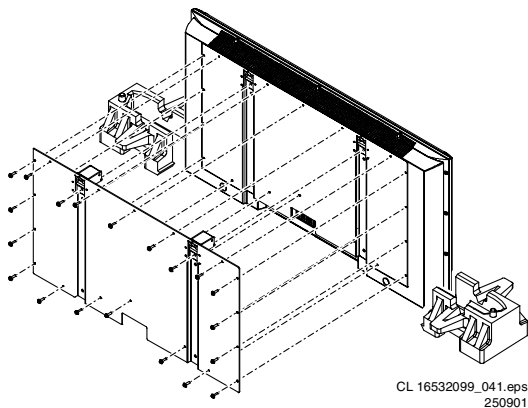


Figure 4-1 Service Position

First, put the monitor in its service position. (Can be done via buffers as showed on figure, but preferable via new service position solution as described below. Still some improvising is needed for service positions panels however). Therefore, disconnect all cables connected to the monitor and take the monitor of the wall (or tabletop stand). Then, fix the monitor to the 2 service-poles. (the 2 poles together form a service-kit: 3122 785 90480; this service-stand can be used for 30" until 42" FTVs).

4.2 Rear Cover Removal

To be able to access or measure the panels, remove the rear cover (metal back plate):

Warning: make sure that the mains power is disconnected before you remove the metal back plate.

1. Remove all fixation screws of the back plate, as indicated in the figure above (five at the top, five at each side, seven at the bottom and the two larger ones just below the "wall mounting holes").
2. Remove the metal back plate. Make sure that wires and flat foils are not damaged during plate removal.

4.3 Service Position Panels

4.3.1 SCAVIO Panel

Solder-side SCAVIO

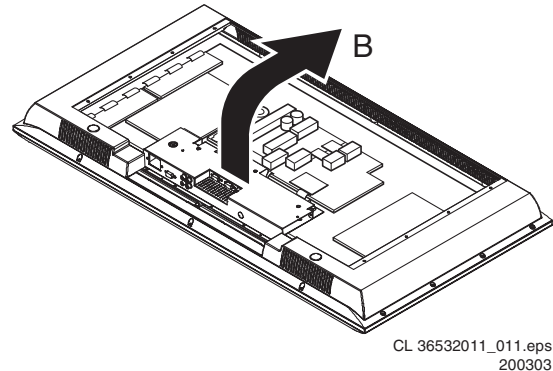


Figure 4-2 Service position SCAVIO (1)

To access the panel:

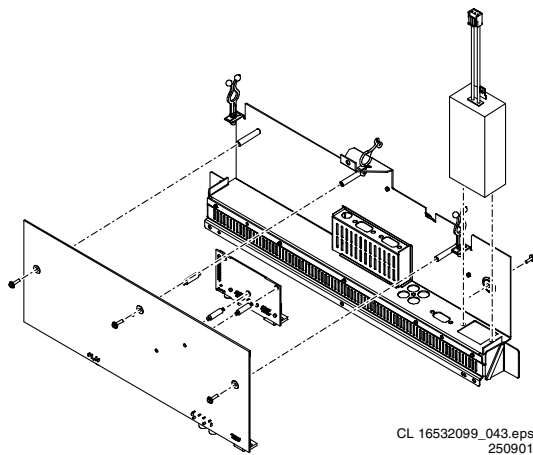
1. Remove the cables from connectors 0320, 0305, 0301, 0319 and 0388 on the SCAVIO panel.
2. Remove the power cable from the mains power inlet to the power supply (connector 0308).
3. Remove the five screws at the bottom of the SCAVIO-panel cover plate.
4. Hold the SCAVIO panel while removing the top screw, in order to prevent that it will fall.
5. Take the panel out, and turn it 180 degrees, so that you face the solder side of the SCAVIO panel.
6. Reconnect all cables. Use a standard power cable to connect the mains directly to PSU-connector 0308, and use the "LED/Switch panel" service kit 3122 785 90410 (as the original cable is too short).

Caution: When measuring, watch out for the "hot" left heat sink of the PSU!

Another way to measure the SCAVIO panel:

1. Remove the five screws at the bottom of the SCAVIO-panel cover plate.
2. Hold the SCAVIO panel while removing the top screw, in order to prevent that it will fall.
3. Put a piece of paper (or cardboard) in front of the Power Supply.
4. Take the panel out, and turn it upward [B], so that you face the solder-side of the SCAVIO panel.

Caution: Make sure that the metal connector plate does not touch any "hot" part of the Power Supply (heatsink).

Component-side SCAVIOCL 16532099_043.eps
250901**Figure 4-3 Service position SCAVIO (2)**

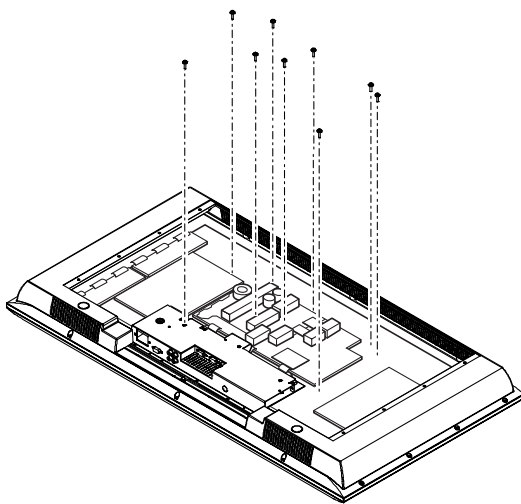
To access the other side of the SCAVIO panel:

1. Disconnect all cables going to the SCAVIO panel.
2. Remove all screws at the connectors of the connector plate, see figure "Solder-side SCAVIO".
3. Remove the three fixation screws that connect the SCAVIO panel to the connector plate, see figure "Component-side SCAVIO".
4. Reconnect the SCAVIO panel, be careful: do not make a short-circuit!

4.3.2 VGA Connector Panel

How to remove the VGA Connector panel:

1. Squeeze the plastic pins that attach this panel to the SCAVIO board, while you pull it carefully upwards.
2. Unplug the flat foil cable.

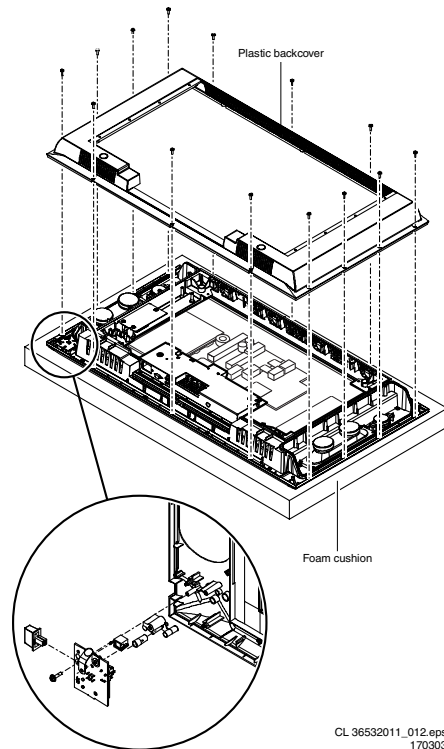
4.3.3 Power Supply PanelCL 36532011_021.eps
200303**Figure 4-4 Remove PSU**

The supply panel can not be repaired by the network. As measure points are accessible for possible re-alignment, there is no further service-position.

To remove the panel unscrew the 9 screws (see drawing) and disconnect the cables.

4.3.4 Audio Amplifier Panel (only valid for "speaker"-version)

The solder-side of this panel is directly accessible. To access the component-side, or to remove the whole panel, unscrew the three fixation screws

4.3.5 LED/Switch Panel and SpeakersCL 36532011_012.eps
170303**Figure 4-5 Service Position LED/Switch Panel and Speakers**

To access or replace the LED/Switch panel and/or speakers:

1. Take the monitor from its service stand, and put it (face down) on a **soft surface** (blanket or foam cushion), to make sure that you do not damage the front glass plate.
2. Unscrew all fixation screws of the plastic back cover: five at all sides.
3. Lift and remove the plastic back cover.
4. You can access now the LED/Switch panel and/or the speakers.

4.3.6 LED/Switch panel

To measure the component-side, or to remove the LED/Switch panel, unscrew one fixation screw (see enlarged part of figure "LED/Switch Panel and Speakers"), and remove the panel.

4.3.7 Loudspeakers (if valid)

When you have removed the plastic back cover, you **must** replace the speaker-box sealing foams (12nc: 3122 358 76221). This, to ensure that the loudspeakers are airtight. **Do not stretch the foam during mounting.** Pay special attention to the corners, to make sure that the foam is not stretched and that it is pushed into the corners.

4.4 PDP and Glass Plate Replacement

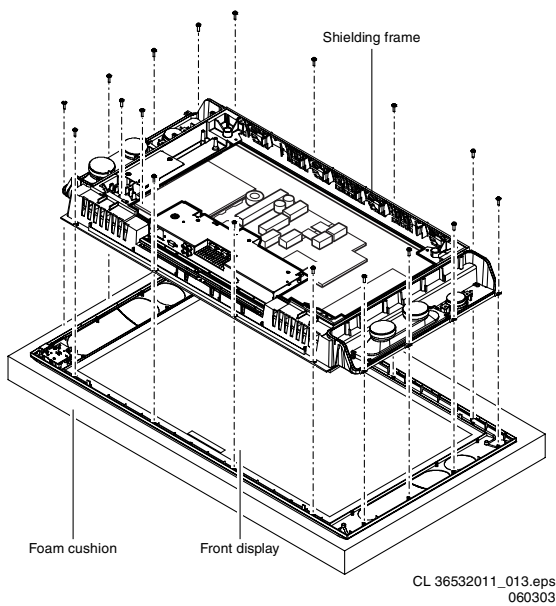


Figure 4-6 Exchange Glass Plate

To exchange the glass plate

1. Take the monitor from its service stand, and put it (face down) on a soft surface (blanket or foam cushion), to make sure that you do not damage the front glass plate.
2. Remove the metal back plate as described in paragraph "Rear Cover Removal".
3. Unscrew all fixation screws of the plastic back cover: four at the left and right side, three at the bottom and top side.
4. Lift and remove the plastic back cover.
5. Unscrew two fixation screws of the triangular shaped cable holder at the left bottom, see figure "Exchange Glass Plate".
6. Unscrew all fixation screws of the (metallised) shielding frame, four at both sides and four at the top and bottom, see figure "Exchange Glass Plate".
7. Unplug the cable of the LED/Switch panel, connector 0320.
8. You can now remove the (metallised) shielding frame, together with the PDP, Audio panel, Power supply and SCAVIO panel attached to it, see figure "Exchange Glass Plate". **Note:** To prevent scratches, make sure to put the shielding frame together with the PDP on a soft surface.
9. Replace the glass plate.

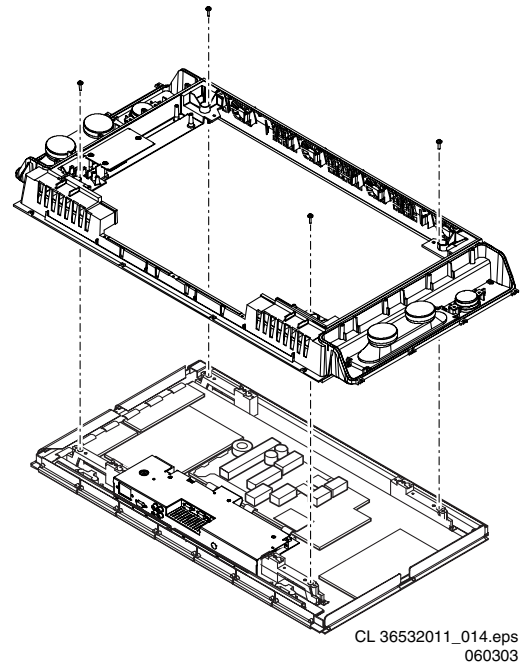


Figure 4-7 Exchange PDP

To exchange the PDP panel:

1. Take out the SCAVIO panel and Power Supply panel.
2. Unscrew all fixation screws of the (metallised) shielding frame (two at the top and two at the bottom, see figure "Exchange PDP").
3. Replace the PDP.

4.5 Re-assembly

To re-assemble the whole set, do all processes in reverse order.

Notes:

- You **must** replace the speaker-box sealing foam, in case the plastic rear cover has been (re)moved.
- While re-assembling, make sure all the cables are in their original position and make sure all the EMC foams are present to ensure "EMC tightness".

5. Service Modes, Error Codes and Fault Finding

Index of this chapter:

1. Test points
2. Service Modes
3. Problems and Solving Tips (related to CSM)
4. ComPair
5. Error Codes
6. The Blinking LED Procedure
7. Protections
8. Repair Tips

5.1 Test Points

The chassis is equipped with test points (I- and F-points) printed on the circuit board assemblies. See test point overviews in section "Block Diagrams"

Perform measurements under the following conditions:

- Service Default Mode.
- Video: colour bar signal (via PC or VGA-generator).
- Audio: 1 kHz, 2 V_{PP} (via PC or VGA-generator).

5.2 Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between a Philips Customer Care Centre (P3C) and a customer.

There is also the option of using ComPair, a hardware interface between a computer (see requirements) and the FTV chassis. It offers the ability of structured trouble shooting, test pattern generation, error code reading, software version readout and software upgrading.

Minimum requirements: a Pentium Processor, Windows 9x/NT/2000/XP, and a CD-ROM drive (see also paragraph "ComPair").

Note: This FM242-monitor has different as the FM24, not a internal pdp-testpattern that can be enabled via the SAM-menu **A test pattern however can be generated.**

How?

Select via ComPair-tool the right hex-address (sub address 0080 and then PS (Pattern Select) 00 full window black; 01-04 full window white, red, green, blue) and more variants until 17)

It however only works when set is signalled (Scavio and pdp, needs a sync). This is less nice solution as in FM24. Switch of the pattern again via hex-code 0080 and 0

5.2.1 Service Default Mode (SDM)

Purpose

- To create a pre-defined setting to get the same measurement results as given in this manual.
- To override SW protections (only when SDM is entered via the "service pins" on connector 0382).
- To start the blinking LED procedure.

Specifications

- All picture settings at 50% (brightness, contrast, etc.).
- Colour temperature is set to "normal".
- Bass, treble and balance at 50%; volume at 25%.
- All service-unfriendly modes (if present) are disabled, like:
 - Video blanking,
 - Slow de-mute,
 - Anti ageing,
 - Automatic switch to Standby when no sync signals are received.

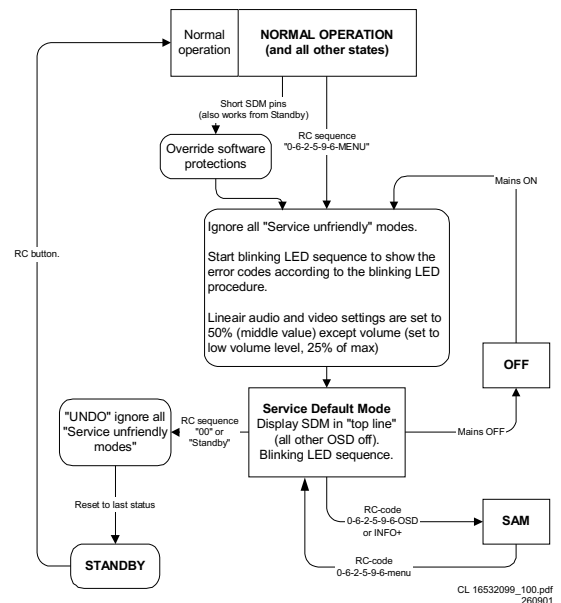


Figure 5-1 SDM Flowchart

How to enter SDM

Use one of the following methods:

- Use the standard RC-transmitter and key in the code **062596**, directly followed by the **MENU** button.
- Short jumpers 1 and 2 of connector 0382 on the SCAVIO panel.

After entering SDM, a blank screen is visible, with SDM in the upper left side for recognition. The Blinking LED procedure is started and will indicate any possible errors via the (orange) front LED.

How to navigate

To toggle to the SAM mode, use a standard customer RC-transmitter and key in the code **062596**, directly followed by the **OSD (i+)** key.

How to exit

Use one of the following methods (the set returns to its last status):

- Switch the set to STANDBY by pressing the power button on the remote control transmitter (if you switch the set "off" by removing the Mains power, the set will return in SDM, when the Mains power is re-applied).
- Use the standard RC-transmitter and key in the code **00**.

5.2.2 Service Alignment Mode (SAM)

Purpose

- To perform (software) alignments.
- Easy way to identify the commercial type number of the set.
- Easy identification of the used software versions.
- To display (or clear) the error code buffer.
- View operational hours.

Specifications

- Operation hours counter.
- Software version reading.
- Error buffer reading and erasing.
- Software alignments.

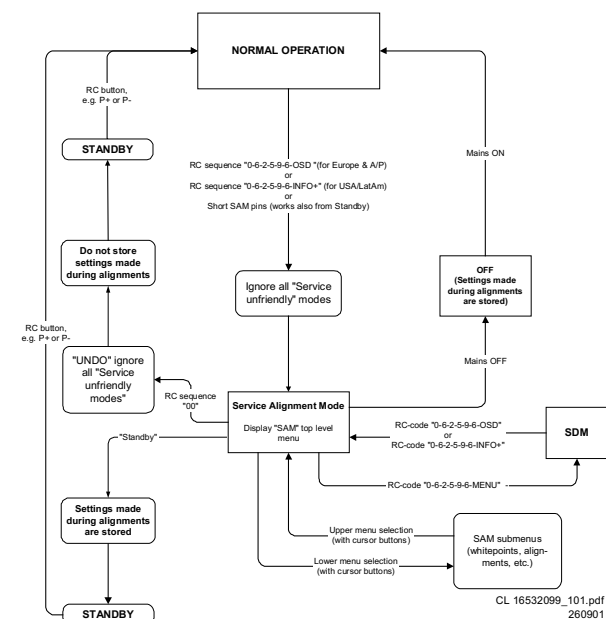


Figure 5-2 SAM Flowchart

How to enter

Use one of the following methods:

- Use a standard RC-transmitter and key in the code **062596** directly followed by the **OSD (+)** button **Note:** the OSD (+) is not available on the original FM242 remote control, therefore use another Philips remote control (e.g. MG, EMG or A10).
- Short jumpers 3 and 4 of connector 0382 on the SCAVIO panel.

The following screen is visible:

Service Alignment Menu	General
Type Nr. - AG Code	42FD9945/01 **00 00
SW Version OTC	AAAAAB-X.Y_XXXXX
SW Version PW	AAAAAB-X.Y_XXXXX
SW Version EPLD	AAAAAB-X.Y_XXXXX
Errors 1	xx xx xx xx xx
Errors 2	xx xx xx xx xx
Operational hours	xx
Reset error buffer	Press OK to reset
Store	Press OK to store

CL 26532011_016.eps 200303

Figure 5-3 SAM Menu "General"

- Type Nr.** Gives the commercial type number of the monitor, e.g. 42FD9945/01.
- AG Code.** Is not implemented.
- SW Version OTC** (AAAAAB-X.Y-xxxxx). **Note:** You will find details of the latest software versions in the chapter "Software Survey" of the "Product Survey - Colour Television" publication, which is published four times each year.
 - A = the chassis name (FM23 for 32" displays or FM242 for 42" SDI-displays).
 - B = the region (E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM; in our case G = Global).
 - (if valid) C = the configuration name (B= Basic, E= Enhanced; for PW & EPLD-software this will be named B).
 - X = the main software version number.
 - Y = the sub software version number.
 - x = last five digits of 12nc code.

- SW Version PW** (AAAAAB-X.Y-xxxxx). See description above.
- SW Version EPLD** (AAAAAB-X.Y-xxxxx). See description above.
- Errors 1.** Gives the last five errors of the error buffer. The last detected error is displayed at the most left position. The errors are displayed as 2 digit numbers and separated by a space. When less than 10 errors occurred, the rest of the line(s) is empty. In case of no errors the text "No Errors" is displayed behind menu item "Errors 1". See paragraph 5.5 for a description.
- Errors 2.** Gives the first five errors of the error buffer. The last detected error is displayed at the most left position.
- Operational hours.** The Operations Hours indicate the time that the display was active with half an hour resolution. It represents the system hours (OTC), not the PDP hours.
- Reset error buffer.** Erase the contents of the error buffer. Press "OK" on your remote control to activate. The content of the error buffer is cleared.
- Store.** This will store the performed alignments. Press "OK" on your remote control to activate.
Note: if you do not want to store the performed alignments, leave the SAM mode via code 00 on your remote control. Do not activate the "store" item.

How to navigate

Use one of the following methods:

- Select the sub-menu's (upper line) with the CURSOR LEFT/RIGHT keys on the remote control transmitter.
- Select the menu items with the CURSOR UP/DOWN keys. With the CURSOR LEFT/RIGHT keys it is possible to:
 - Activate the selected menu item.
 - Change the value of the selected menu item.
- To toggle to the SDM mode, use the standard customer RC-transmitter and key in the code **062596**, directly followed by the **MENU** key.

How to exit

Use one of the following methods:

- Switch the set "off" (with the Mains switch or by pulling the Mains cord). **Note:** new alignment settings are always stored, even when item "store" was not activated!
- Switch the set to "standby" by pressing the power button on the remote control transmitter. **Note:** new alignment settings are always stored, even when item "store" was not activated!
- Use the standard RC-transmitter and key in the code **0 0**. **Note:** new alignment settings are not stored (except when item "store" was activated)!

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer or helpdesk. The service technician can then ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer. The CSM is a read only mode, therefore modifications in this mode are not possible.

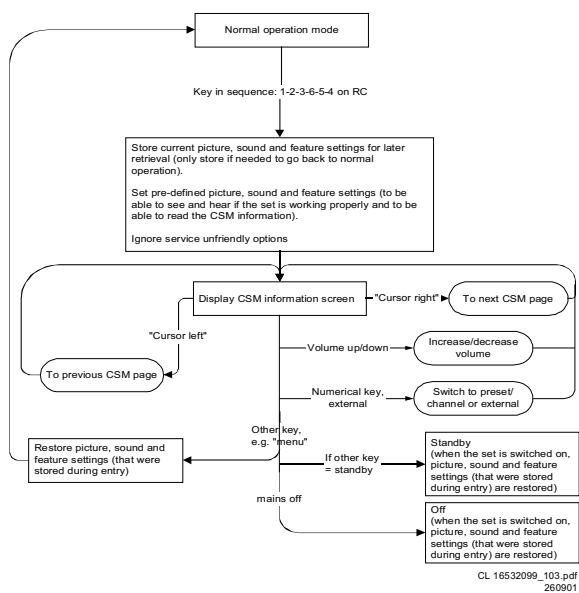


Figure 5-4 CSM Flowchart

How to enter

Use the standard customer RC-transmitter and key in the code **123654**.

When CSM is entered, the values of brightness, contrast, etc. are set to 50% (of max. value), and volume is set to 25%, to ensure that you always have a picture and sound.

After switching "on" the Customer Service Mode, the following screen will appear:

Customer Service Menu 1	
1 - Type Nr. - AG Code	42FD9945/01
2 - SW Version OTC	AAAAAB-X.Y_XXXX
3 - SW Version PW	AAAABC-X.Y_XXXX
4 - SW Version EPLD	AAAABC-X.Y_XXXX
5 - Code 1	xx xx xx xx xx
6 - Code 2	xx xx xx xx xx
7 - Volume	xx
8 - Brightness	xx
9 - Contrast	xx

Customer Service Menu 2	
10 - Colour	xx
11 - Tint	xx
12 - Sharpness	xx
13 - Soundmode	xx
14 - Source	xx
15 - AV Mute	xx

CL 36532011_015.eps
200303

Figure 5-5 CSM Menu

- Type Nr. AG Code.** Gives the commercial type number of the monitor, e.g. 42FD9945/01. AG Code is not implemented.
- SW Version OTC (AAAAAB-X.Y-xxxxx)** **Note:** You will find details of the latest software versions in the chapter "Software Survey" of the "Product Survey - Colour Television" publication, which is published four times each year.
 - A = the chassis name (FM23 for 32" displays or FM242 for 42" SDI-displays).
 - B = the region (E= Europe, A= Asia Pacific, U= NAFTA, L= LATAM or G = Global).

- (if valid) C = the configuration name (B= Basic, E= Enhanced).
- X = the main software version number.
- Y = the sub software version number.
- x = last five digits of 12nc code.

- SW Version PW (AAAABC-X.Y-xxxxx).** See description above.
- SW Version EPLD (AAAABC-X.Y-xxxxx).** See description above.
- Code 1.** Gives the last five errors of the error buffer. The last detected error is displayed at the most left position. The errors are displayed as 2 digit numbers and separated by a space. When less than 10 errors occurred, the rest of the line(s) is empty. In case of no errors, the text "No Errors" is displayed behind menu item "Code 1". See paragraph "Error Buffer" for a description.
- Code 2.** Gives the first five errors of the error buffer. The last detected error is displayed at the most left position.
- Volume.** Gives the last volume status for the selected source, as set by the customer.
- Brightness.** Gives the last brightness status for the selected source, as set by the customer.
- Contrast.** Gives the last contrast status for the selected source, as set by the customer.
- Colour** (not present in *Basic* configuration). Gives the last colour status for the selected source, as set by the customer.
- Tint** (only for *NTSC Enhanced* configuration). Gives the last tint status for the selected source, as set by the customer.
- Sharpness.** Gives the last sharpness status for the selected source, as set by the customer.
- Source.** Gives the selected source, as set by the customer.
- AV Mute.** Indicates if AV Mute is "on" or "off".

How to navigate

Use one of the following methods:

- Switch to the other CSM page with the CURSOR LEFT/ RIGHT keys on the remote control.
- You can increase/decrease volume with the VOLUME UP/ DOWN keys on the remote control.
- You can switch to another source with the NUM/EXT keys on the remote control.

How to exit

Use one of the following methods:

- Press the MENU key of the remote control transmitter.
- Switch the set to "standby" with the Power switch on the remote control.
- Switch the set "off" with the Mains power switch.

5.3 Problems and Solving Tips (Related to CSM)**5.3.1 Picture Problems**

Note: Below described problems are all related to the monitor settings. The procedures to change the value (or status) of the different settings are described.

Picture too dark or too bright

Increase/decrease the BRIGHTNESS and/or the CONTRAST value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

White line around picture elements and text

Decrease the SHARPNESS value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

Snowy picture and/or unstable picture

A scrambled or decoded signal is received.

Black and white picture

Increase the COLOUR value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

Menu text not sharp enough

Decrease the CONTRAST value when the picture improves after you have switched on the Customer Service Mode. The new value is automatically stored.

5.3.2 Sound Problems

(if valid, related to speaker-version yes or no)

No sound from left or right speaker

Check item "Volume" in the CSM mode. If value is low, increase the volume level. The new value is automatically stored.

No sound or sound too loud (after channel change/switching on)

Increase/decrease the VOLUME level when the volume is OK after you switched on the CSM. The new value is automatically stored.

5.4 ComPair**5.4.1 Introduction**

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (Dealer Service Tool), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I²C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I²C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based faultfinding program, and an RS232 cable between PC and the (defective) product.

The ComPair faultfinding program is able to determine the problem of the defective monitor. ComPair can gather diagnostic information in two ways:

- **Automatic** (by communication with the monitor): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I²C level. ComPair can send and receive commands to the micro controller of the monitor, and so can access the I²C bus of the monitor. In this way, it is possible for ComPair to communicate (read and write) to devices on the I²C busses of the FTV monitor.
- **Manually** (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the monitor is working correctly and only to a certain extent. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point F7 and click on the correct oscillogram you see on the oscilloscope*). You can answer by clicking on a link (e.g.

text or a waveform picture) that will bring you to the next step in the faultfinding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

Beside fault finding, ComPair provides some additional features like:

- Software upgrading (upload possible to OTC and PW Scaler).
- Emulation of the (European) Dealer Service Tool (DST).
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink. **Example:** Measure the DC-voltage on capacitor C2228 (Schematic/Panel) of the SCAVIO panel. Click on the "Panel" hyperlink to automatically show the PWB with a highlighted capacitor C2568. Click on the "Schematic" hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 How to Connect

1. First, install the ComPair Browser software on your PC (read the installation instructions carefully).
2. Connect an RS232 interface cable between a free serial (COM) port on your PC and the RS232 connector on the FM242 plasma monitor.
3. Switch the plasma monitor "off" and "on" again (with the Mains switch).
4. Start the ComPair program and follow the instructions.

Note: once the set is in ComPair mode, the front LED will blink red, at a frequency of 0.3 Hz.

5.4.4 How to Order

ComPair order codes:

- Starter kit ComPair32 software (registration version): 3122 785 60040.
- ComPair32 CD (update): 3122 785 60070.
- Starter kit SearchMan32 software: 3122 785 60050.
- SearchMan32 CD (update): 3122 785 60080.

Note: The RS232 cable is not included. It is a standard cable (9p sub-D male-to-female) that can be obtained by a computer store. It is supplied however with the ComPair interface (4822 727 21631), necessary for servicing other Philips TVs.

5.5 Error Buffer

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is written at the left side and all other errors shift one position to the right.

5.5.1 How to Read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only if you have a picture).
Examples:
 - Errors: **6 0 0 0 0**, error code 6 is the last and only detected error.
 - Errors: **9 6 0 0 0**, error code 6 was first detected and error code 9 is the last detected (newest) error.
- Via the blinking LED procedure (when you have no picture). See paragraph "The blinking led procedure".
- Via ComPair.

5.5.2 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:

- By activation of the "Reset error buffer" command in the SAM menu.
- When you transmit the code **062599** with a standard remote control transmitter.

5.5.3 Error Codes

Table 5-1 Error code overview

Error	Device	Description	Item	Diagr.
1	TEA6422D	Audio switch (only Enhanced)	7798	SC13
2	MSP3451G	Sound processor	7812	SC14
3	PCF8574- SCAVIO	I/O expander SCAVIO	7540	SC8
4	PCF8591	AD-DA expander	7530	SC8
5	FS6377	Clock generator	7570	SC9
6	PCF8574-PSU	I/O expander PSU	7370	P3
7	24C16 OTC	NVM OTC	7430	SC7
8	24C16 PW	NVM PW	7580	SC9
9	SAA7118	Video decoder (only Enhanced)	7225	SC5
10	AD9887	ADC/TMDS receiver	7170	SC4
11	SDA9400	De-interlacer (only Enhanced)	7280	SC5
12	EP1K30QC	EPLD processor	7656	SC11
13	PDP	I2C error of the PDP		
20	Download comm.	Errors during downloading		
21	CSP comm.	CSP time-out error		
40	Temperature alarm	Detections of over-temperature		
70	Over voltage	Vs, Va, +5V, +3V3 overvoltage	Black box	P
71	Vs under voltage	Vs under voltage	Black box	P
72	Va under voltage	Va under voltage	Black box	P
73	+5V under voltage	+5V under voltage	Black box	P
74	+3V3 under voltage	+3V3 under voltage	Black box	P
75	DC-PROT	Audio amplifier protection	Black box	P

Notes:

- In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present.
- If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).
- In case error 70 occurs, the belonging over-voltage line cause can be located via measuring. (via measuring all 4 voltages simultaneously with an oscilloscope). Chosen

FM242-workshops will be trained how to do so. (special document will be generated for this).

5.6 The Blinking LED Procedure

Via this procedure, you can make the contents of the error buffer visible via the front LED (orange colour). This is especially useful when there is no picture. When no errors are present, the LED will stay green.

When the SDM is entered, or when code **062500** is entered with the remote control, the LED will blink the contents of the error-buffer.

Error-codes ≥ 10 are shown as follows:

1. n long blinks of 750 ms, which is/are an indication of the decimal digit,
2. a pause of 1.5 s,
3. n short blinks (n = 1-9),
4. when all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
5. the sequence starts again.

Example of error buffer: **12 9 6 0 0**

After entering SDM:

1. 1 long blink of 750 ms followed by a pause of 1.5 s,
2. 2 short blinks followed by a pause of 3 s,
3. 9 short blinks followed by a pause of 3 s,
4. 6 short blinks followed by a pause of 3 s,
5. 1 long blink of 3 s to finish the sequence,
6. the sequence starts again.

5.7 Protections

You can read the error codes of the error buffer via the service menu (SAM), the blinking LED procedure, or via ComPair. If a fault situation is detected an error code will be generated and if necessary, the set will be put in the protection mode. Blinking of the red LED at a frequency of 5 Hz indicates the protection mode.

In some error cases, the microprocessor does not put the set in the protection mode. The error codes are indicated by an orange front LED.

To get a quick diagnosis the chassis has three service modes implemented:

- The Customer Service Mode (CSM): easy way to read out the status of the set.
- The Service Default Mode (SDM): start-up of the set in a predefined way.
- The Service Alignment Mode (SAM): adjustment of the set via a menu and with the help of test patterns.

Exceptional 'protection' situation

There exists one 'protection' (due to too high internal set-temperature), where the set does not switch to 'protection'-mode but to Standby-mode. This protection is not logged into the error-buffer.

When the set becomes too warm, an 'On Screen Display'-message will be showed set is going to switch to Standby. After some time set can be switched on again. (It is very unlikely this will happen. For that reason this performance has been accepted).

Temperature error The monitor will switch to standby automatically. Please allow cool down.

5.8 Repair Tips

If one of the errors of the error buffer points to a defective supply, then the supply-panel must be send for central repair. If the symptoms (still to be communicated; e.g. when VS-value is too high some pixels do not extinguish, when VS-value is too low some pixels do not enlighten) match with a possible misalignment of a supply-line, this supply-line could be checked, and re-aligned.

Only do this if there is a slight spec-violation.

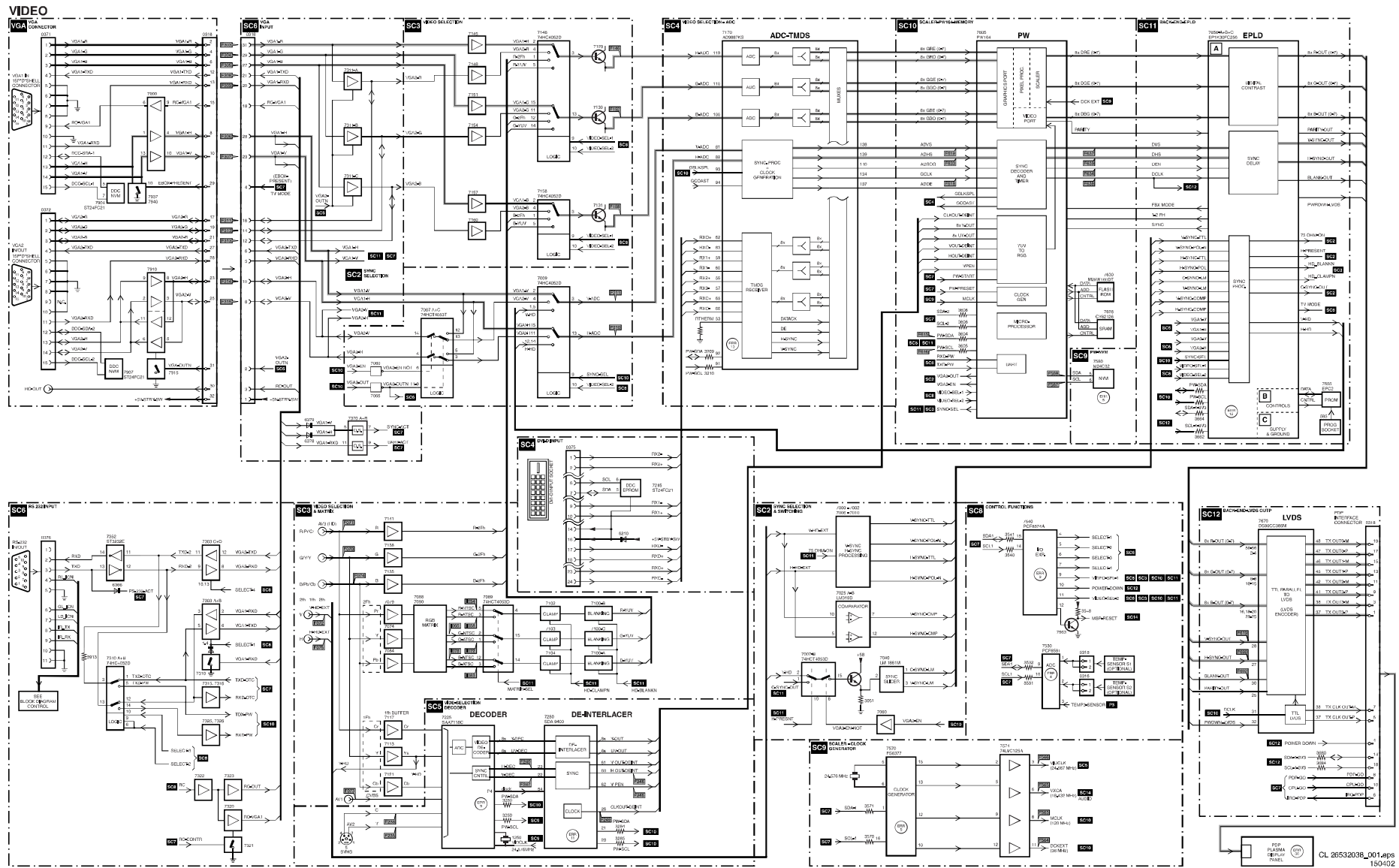
In case it does not help, re-align to the previous wrong setting, to keep cause-image in tact, for central repair workshop.

Replace supply panel by a new one, and match the supply with the pdp. .

- (See alignment instructions in chapter "Alignments")

6. Block Diagrams, Testpoint Overviews, and Wiring Diagram

Block Diagram Video

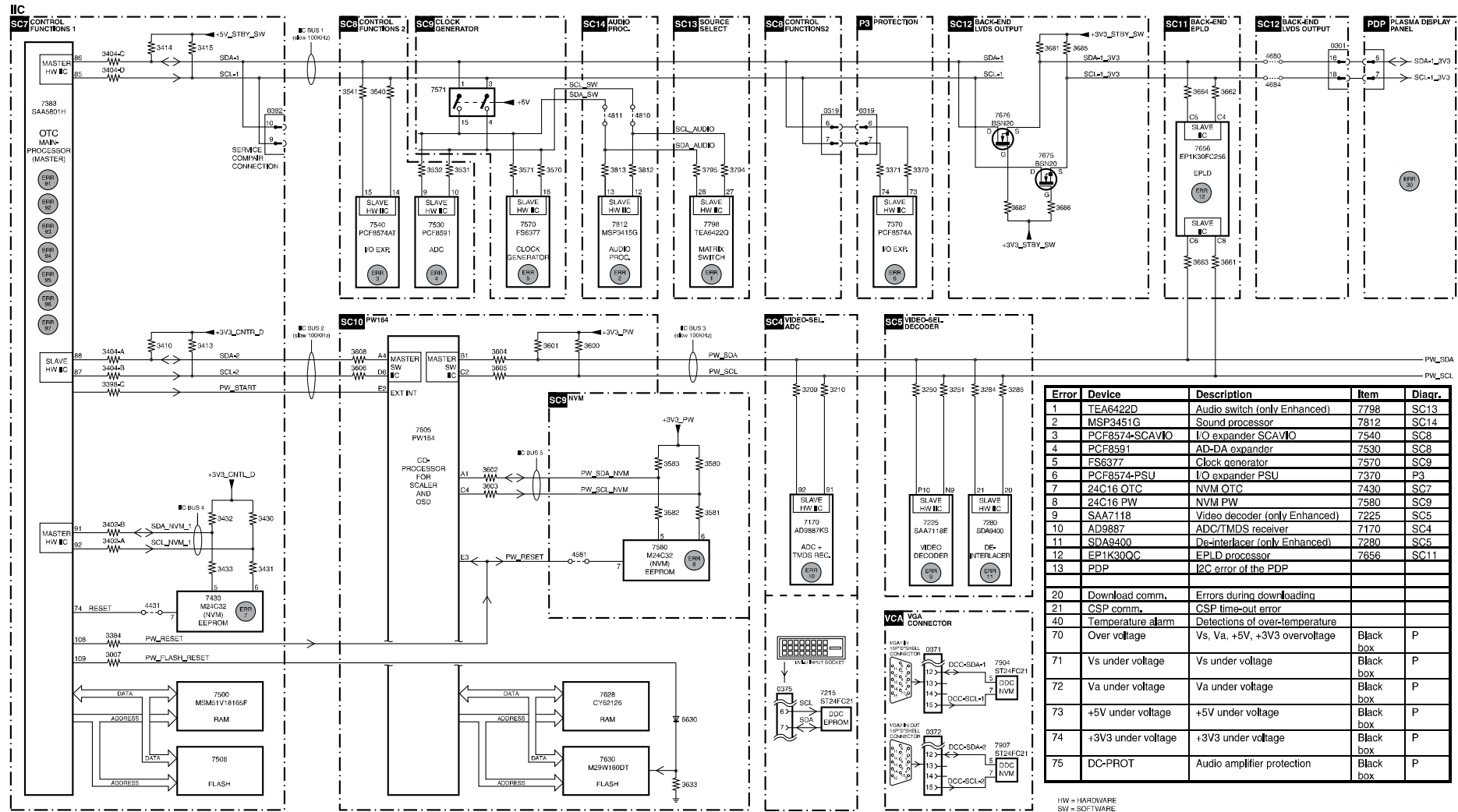


AUDIO

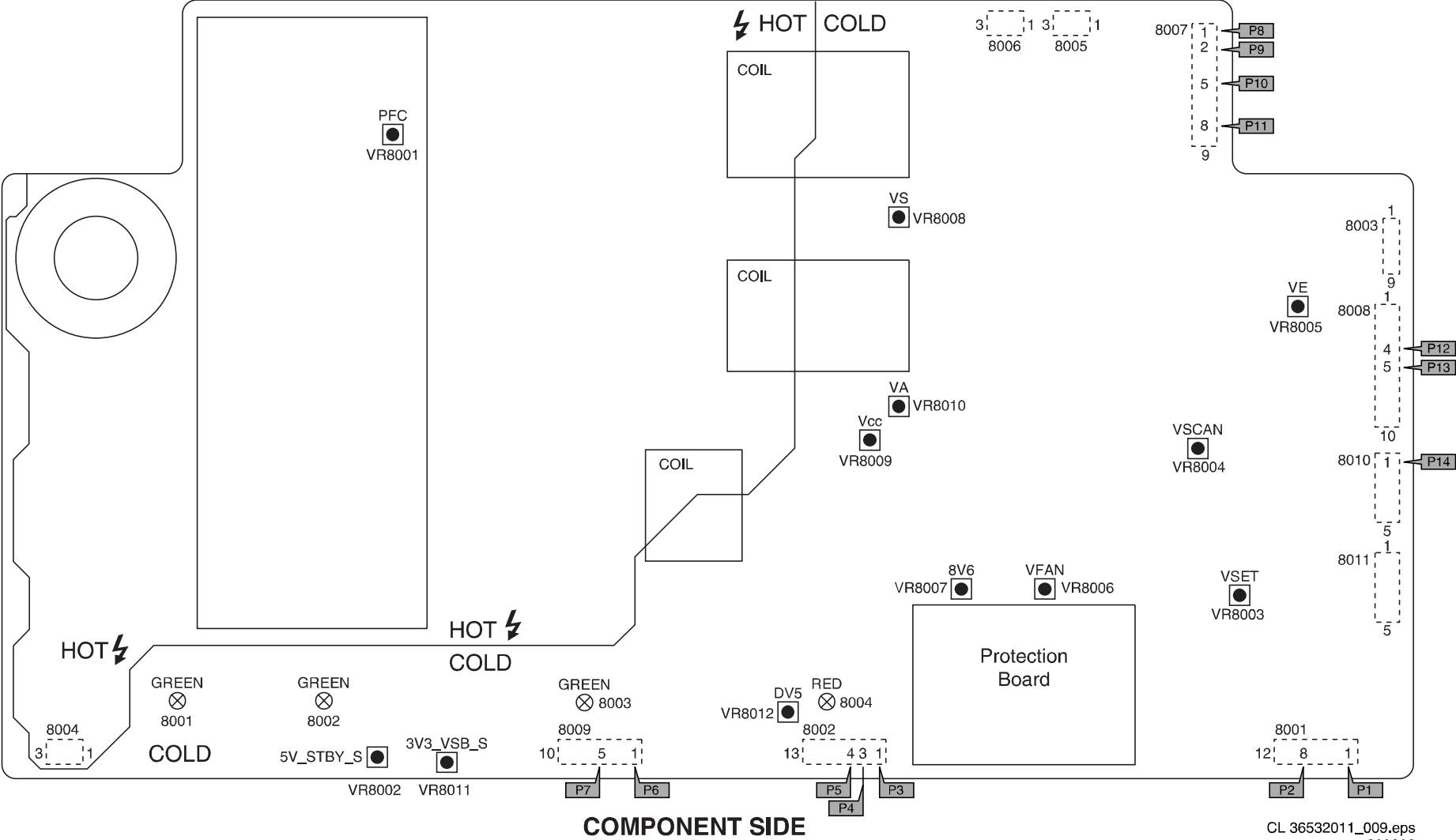


CL 36532011_018.eps
200303

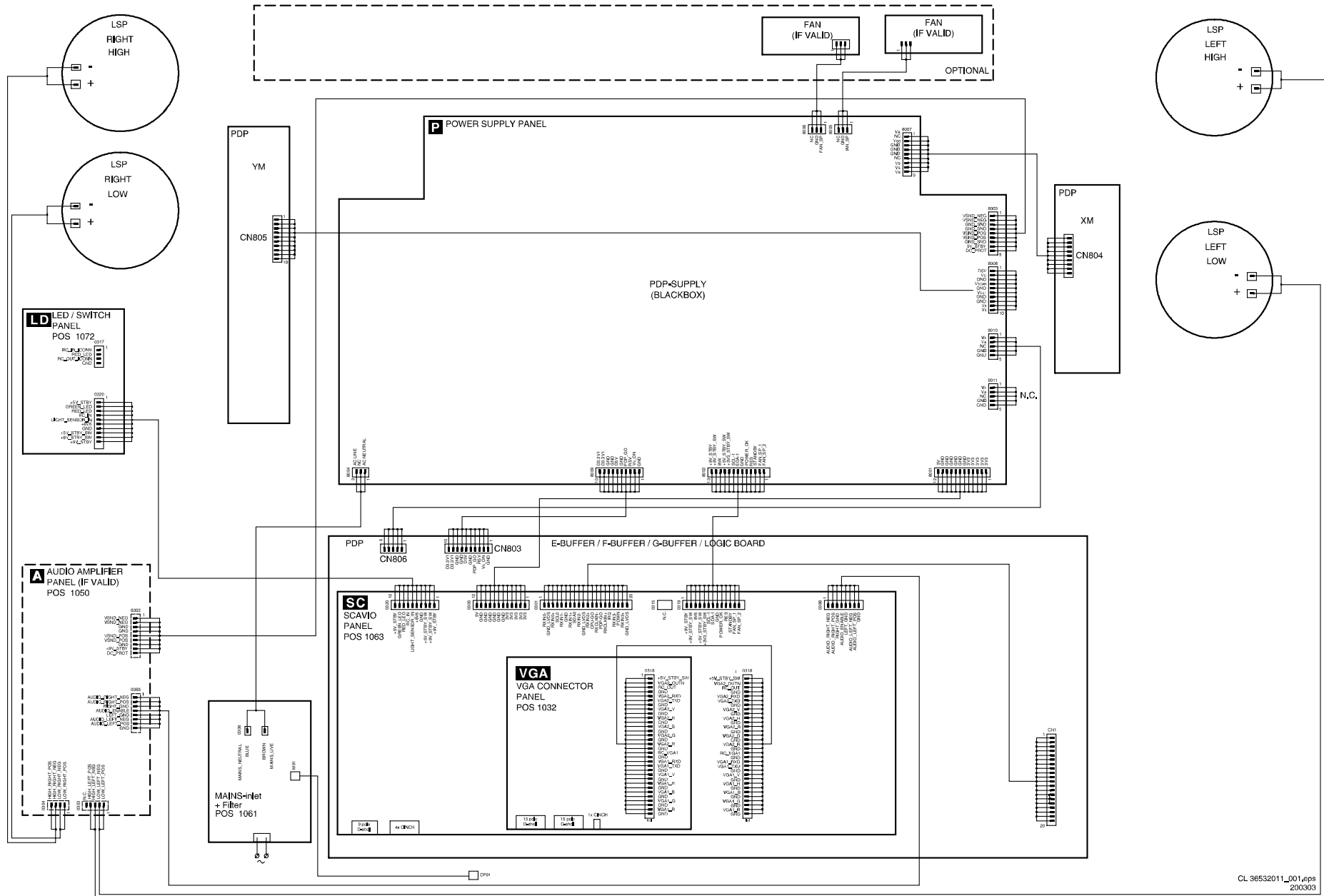
I2C-IC Overview



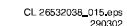
Testpoint Overview: Power Supply



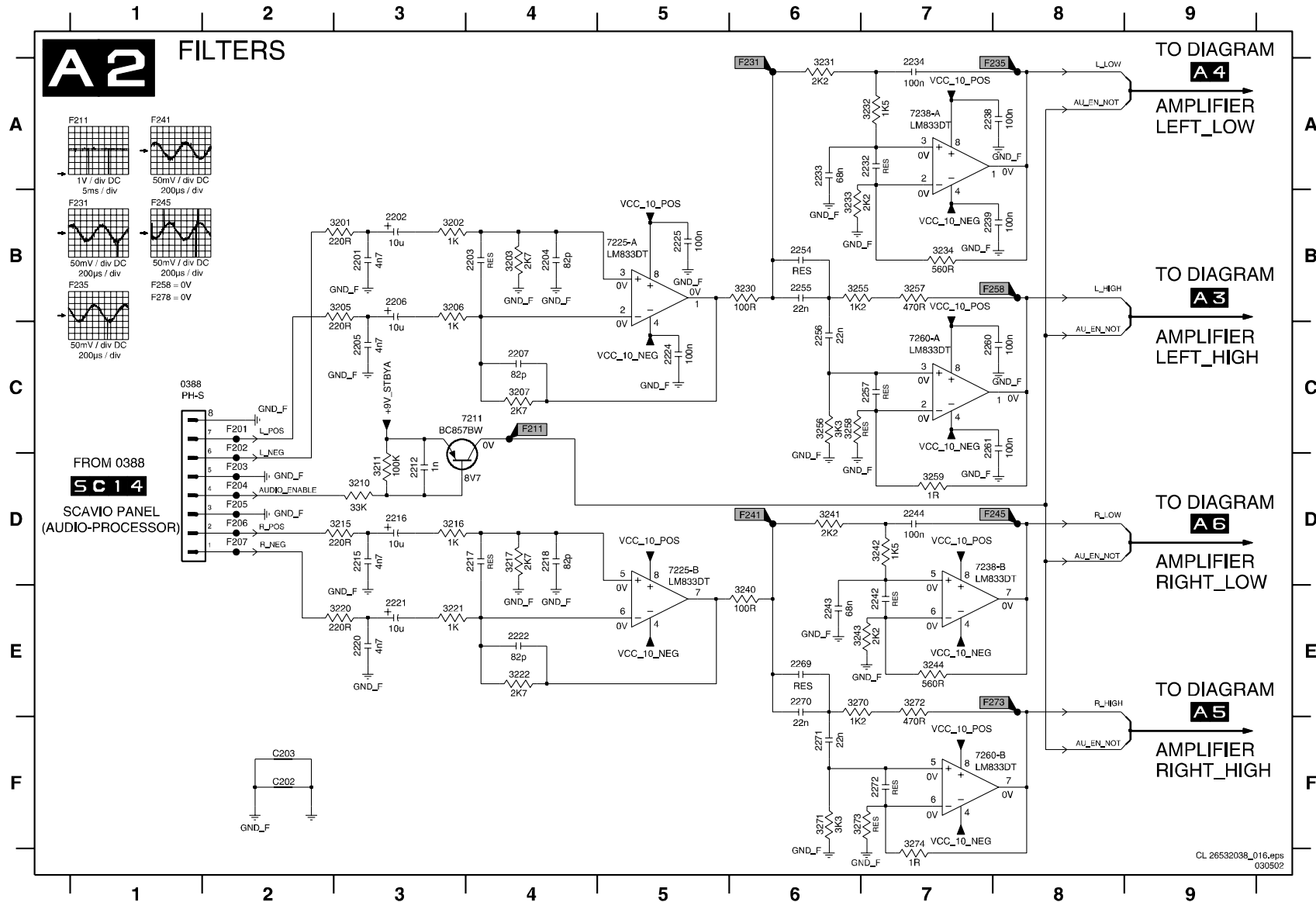
Wiring Diagram



Audio Panel & Supply: DC Protection

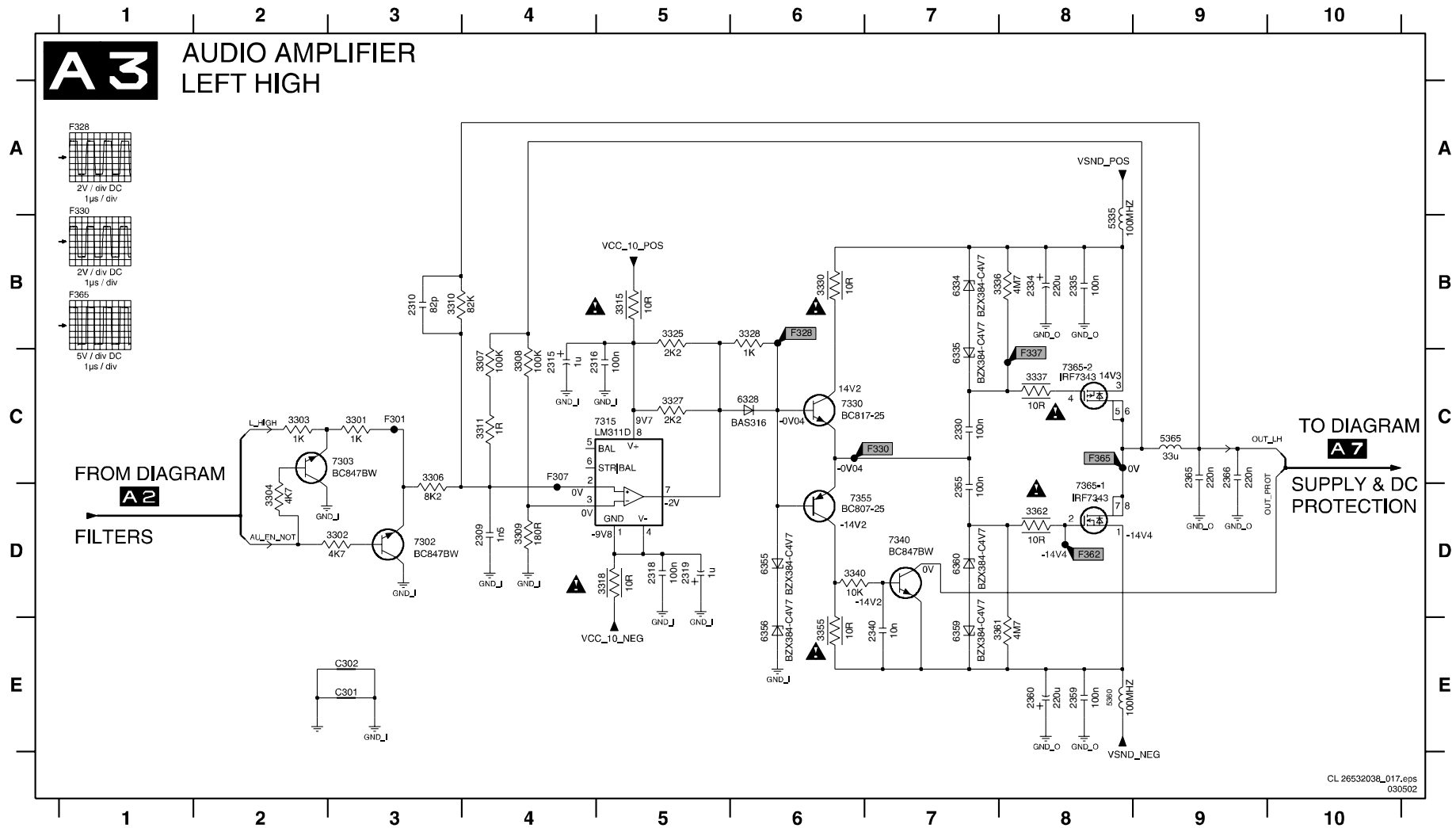


Audio Panel & Supply: Filters



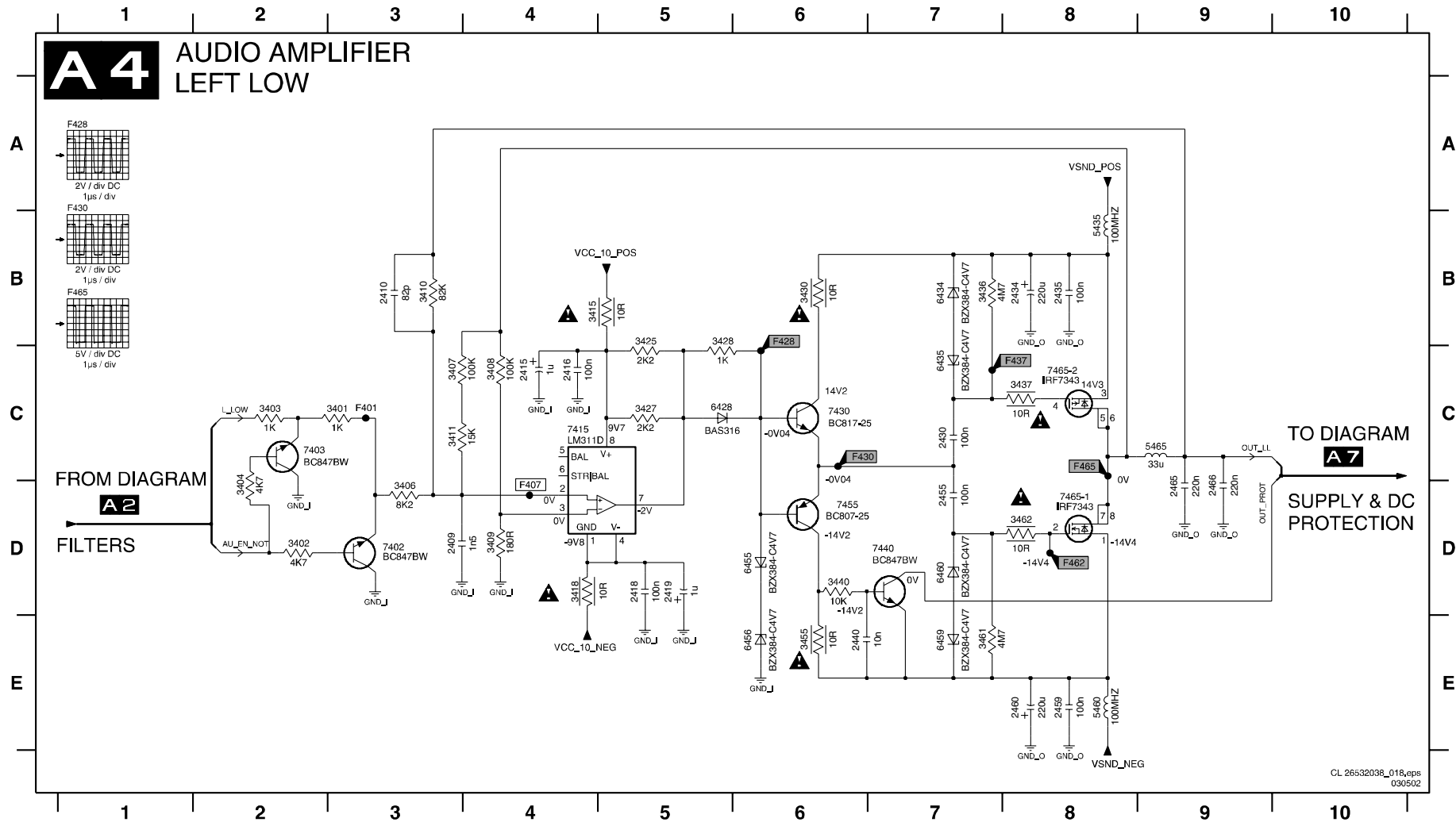
Audio Panel & Supply: Left High

2309 D4	2316 C5	2330 C7	2340 E7	2360 F8	3301 C3	3304 D2	3308 C4	3311 C4	3325 B5	3330 B6	3340 D6	3362 D8	3365 C9	6335 C7	6359 E7	7303 C3	7340 D7	7365-2 C8	F301 C3	F330 C7	F365 C8
2310 B3	2318 D5	2334 B8	2355 D7	2365 C9	3302 C3	3306 C3	3315 B5	3327 C5	3336 B8	3355 E6	5335 B8	6328 C6	6355 D6	6360 D7	7315 C4	7355 D6	C301 E2	F307 C4	F337 C8		
2315 C4	2319 D5	2335 B8	2359 E8	2366 C9	3303 C2	3307 C4	3310 B3	3318 D5	3328 B6	3337 C8	3361 E8	5360 E8	6334 B7	6356 E6	7320 D3	7330 C6	7365-1 D8	C302 E3	F328 B6	F362 D8	



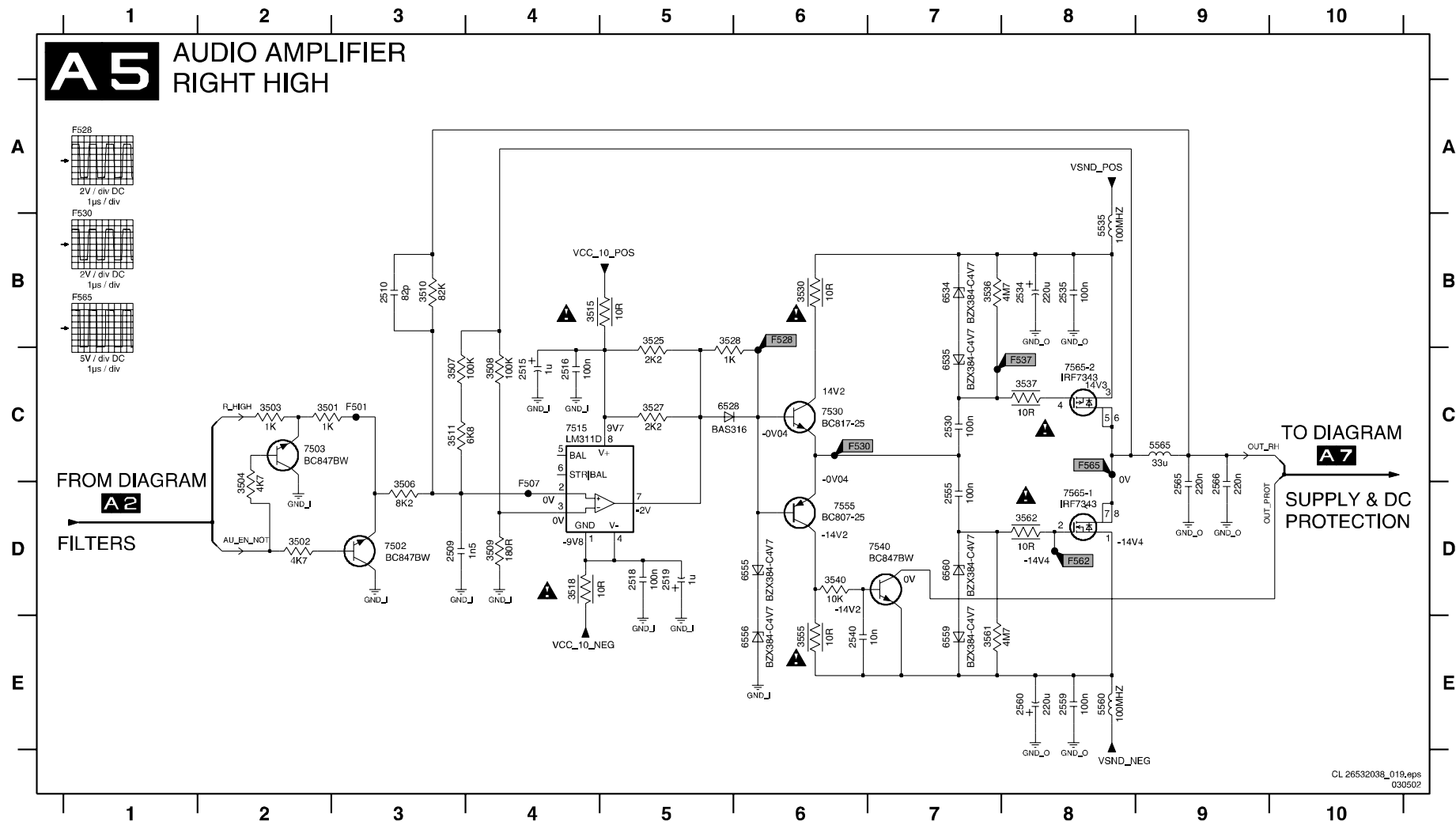
Audio Panel & Supply: Left Low

2409 D3	2416 C4	2430 C7	2440 E6	2460 E8	3401 C3	3404 D2	3408 C4	3411 C3	3425 B5	3430 B6	3440 D6	3462 D8	5465 C9	6435 C7	6459 E7	7403 C2	7440 D7	7465-2 C8	F428 B6	F462 D8
2410 B3	2418 D5	2434 B8	2455 D7	2465 D9	3402 D2	3406 C3	3409 D4	3415 B4	3427 C5	3436 B7	3455 E6	5435 B8	6428 C5	6455 D6	6460 D7	7415 C4	7455 D6	F401 C3	F430 C6	F465 C8
2415 C4	2419 D5	2435 B8	2459 E8	2466 D9	3403 C2	3407 C3	3410 B3	3418 D4	3428 B5	3437 C8	3461 E7	5460 E8	6434 B7	6456 E6	7402 D3	7430 C6	7465-1 D8	F407 D4	F437 C8	



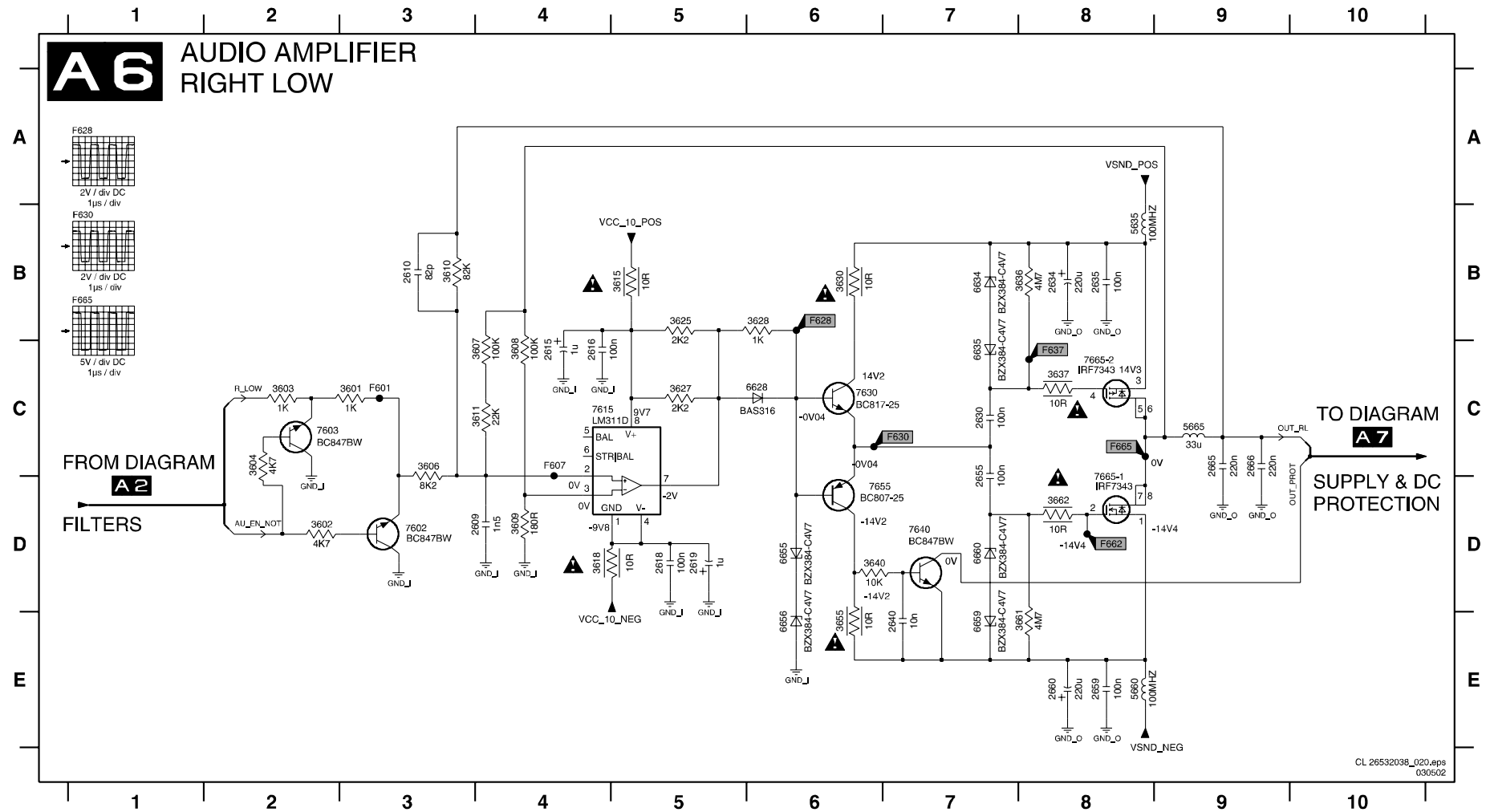
Audio Panel & Supply: Right High

2509 D3	2516 C4	2530 C7	2540 E6	2560 E8	3501 C2	3504 D2	3508 C4	3511 C3	3525 B5	3530 B6	3540 D6	3562 D8	5565 C9	6535 C7	6559 E7	7503 C2	7540 D7	7565-2 C8	F528 B6	F562 D8
2510 B3	2516 D5	2534 B8	2555 D7	2565 D9	3502 C2	3506 D3	3509 D4	3515 B4	3527 C5	3536 B7	3555 E6	5535 B8	5528 C5	6555 D6	6560 D7	7515 C4	7555 D6	F501 C3	F530 C6	F565 C8
2515 C4	2519 D5	2535 B8	2559 E8	2569 D9	3503 C2	3507 C3	3510 B3	3518 D4	3528 B5	3537 C8	3561 E7	5560 E8	6534 B7	6555 E6	7502 D3	7530 C6	7565-1 D8	F507 D4	F537 C8	



Audio Panel & Supply: Right Low

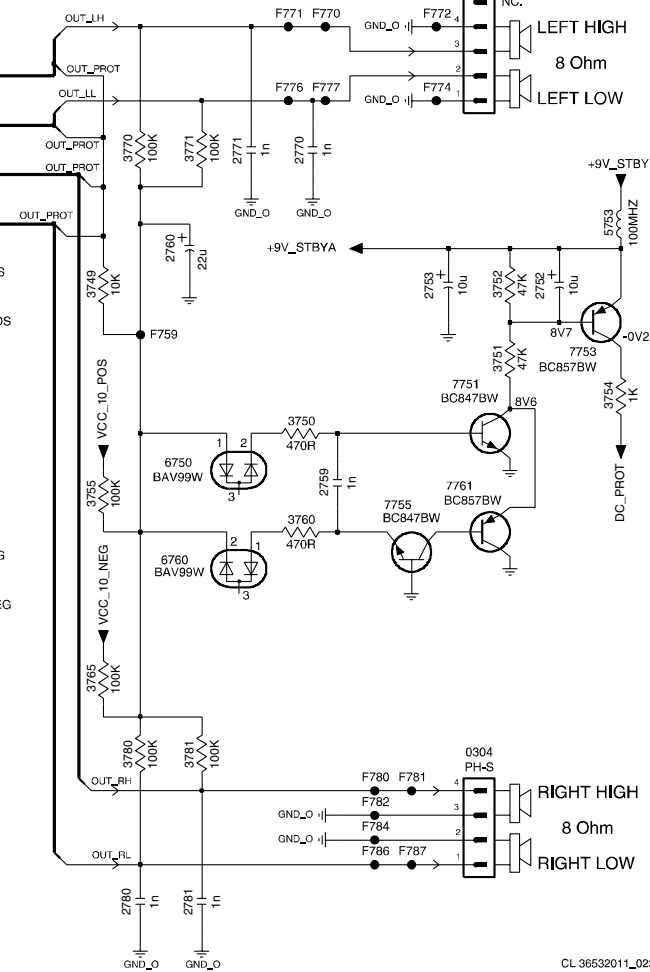
2609 D4	2616 C4	2630 C7	2640 E7	2660 E8	3601 C3	3604 C2	3608 C4	3611 C4	3625 B5	3630 B6	3640 D6	3662 D8	5665 C9	6635 C7	6659 E7	7603 C2	7640 D7	7665-2 C8	F628 B6	F662 D8
2610 B3	2618 D5	2634 B8	2655 C7	2665 C9	3602 D2	3606 C3	3609 D4	3615 B5	3627 C5	3636 B8	3655 E6	5635 B8	6628 C6	6655 D6	6660 D7	7615 C4	7655 D6	F601 C3	F630 C7	F665 C8
2615 C4	2619 D5	2635 B8	2659 E8	2666 C9	3603 C2	3607 C4	3610 B3	3618 D4	3628 B6	3637 C8	3661 E8	5660 E8	6634 B7	6656 E6	7602 D3	7630 C6	7665-1 D8	F607 C4	F637 C8	



SUPPLY & DC PROTECTION

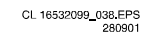
SUPPLY

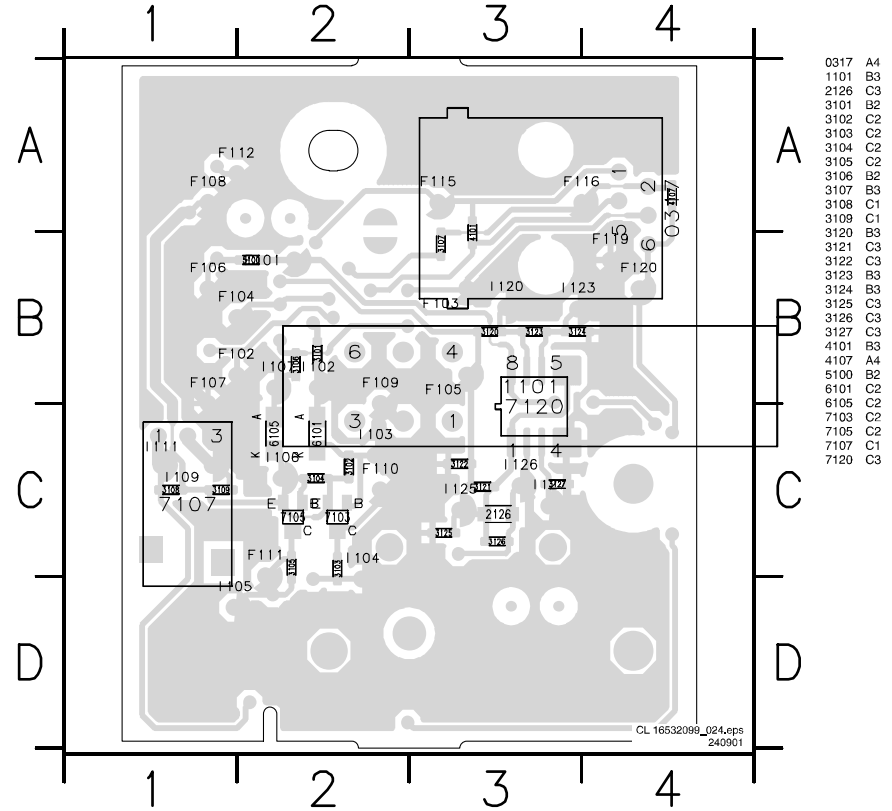
DC PROTECTION



03002 C1	F770 A8
03003 A8	F771 A8
03004 E8	F772 A8
03005 E1	F774 A8
03090 E2	F776 A8
03091 E3	F777 A8
1730 B3	F780 E8
1740 D3	F781 E8
2730 C3	F782 F8
2732 C4	F784 F8
2734 D5	F786 F8
2740 E3	F787 F8
2742 E4	F790 E2
2744 E5	F792 E2
2752 D9	F798 E2
2753 C8	F799 E2
2759 D8	
2760 B7	
2770 B8	
2771 B7	
2780 F7	
2781 F7	
2799 F1	
3732 C4	
3733 C5	
3734 E4	
3743 E5	
3749 C6	
3750 C8	
3751 C9	
3752 C9	
3754 C9	
3755 D6	
3760 D8	
3765 E6	
3770 B7	
3771 B7	
3780 E7	
3783 E7	
3789 E2	
5714 C3	
5719 D3	
5725 D3	
5753 B9	
6732 C4	
6745 E4	
6750 D7	
6760 D7	
7735 C5	
7736 C4	
7745 D5	
7746 E4	
7751 C8	
7753 C9	
7755 D8	
7761 D9	
C702 F3	
C703 E3	
C704 E3	
F711 C2	
F712 C2	
F713 C2	
F714 C2	
F717 D2	
F718 D2	
F719 D2	
F723 D2	
F724 D2	
F725 D2	
F730 B5	
F732 C4	
F733 C5	
F736 C4	
F740 D5	
F742 E4	
F743 E5	
F745 D5	
F746 E4	
F759 C7	

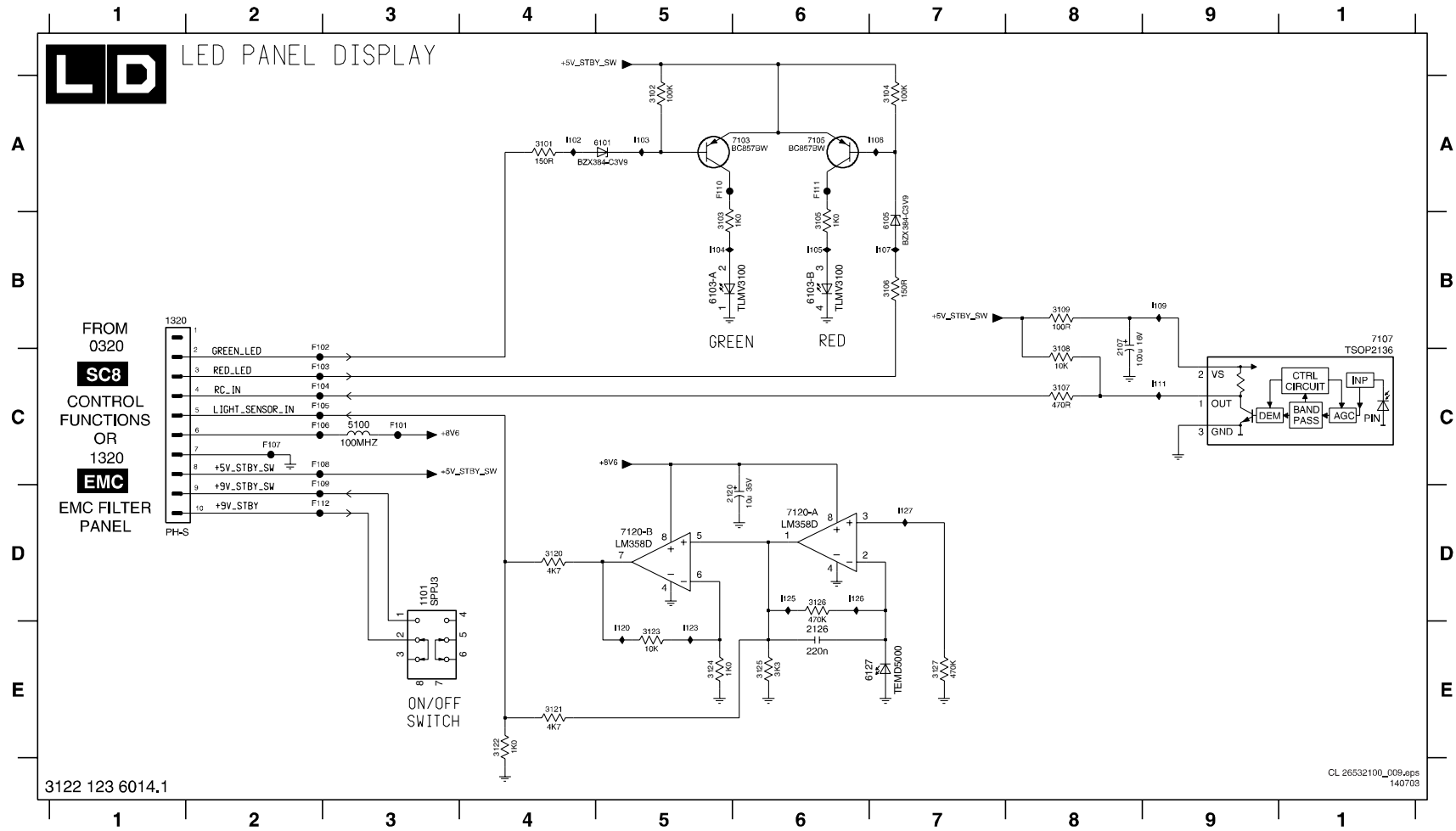
LED/SWITCH PANEL



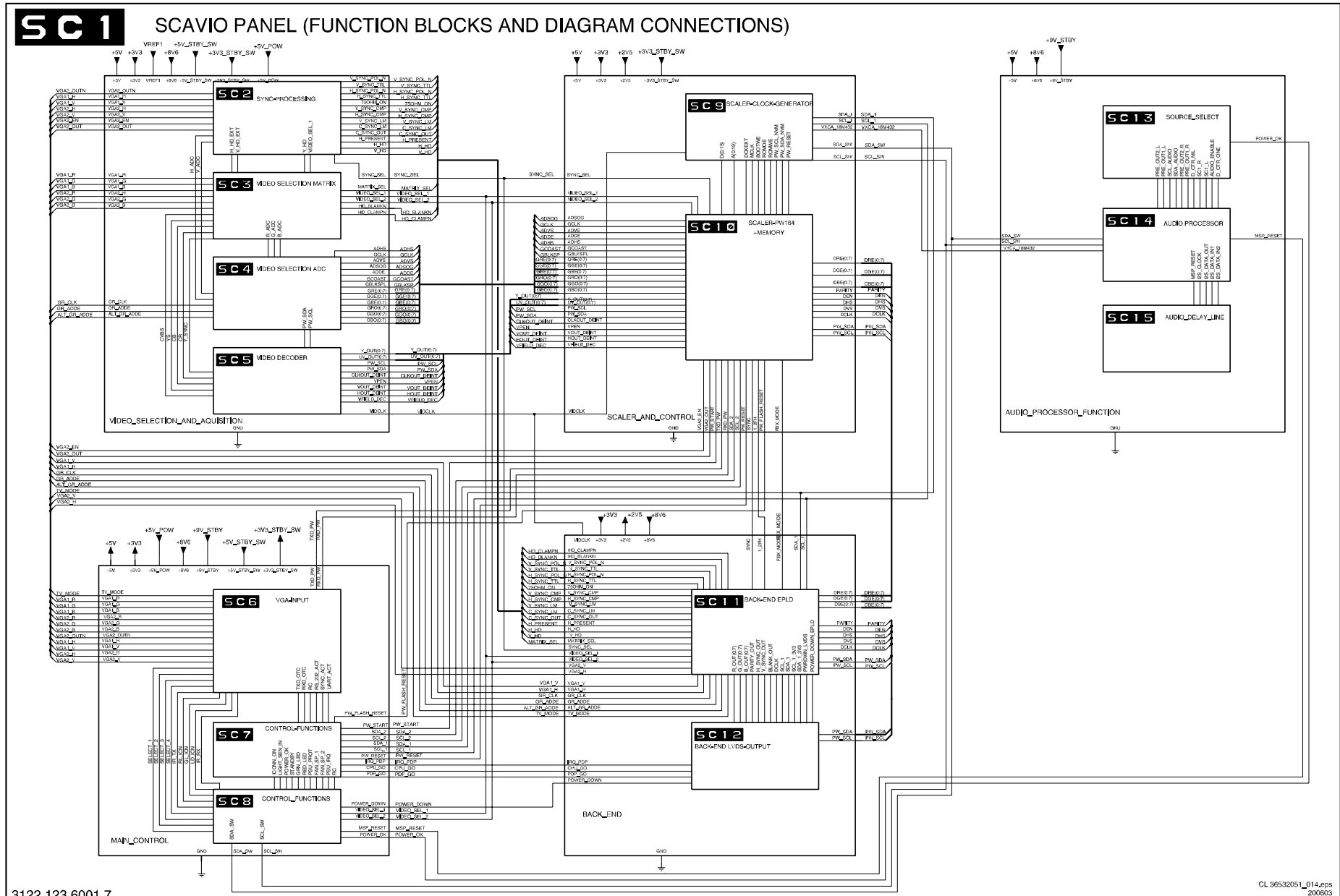


LED Panel Display (for Speakerless Sets)

1101 D3	2126 E6	3104 A7	3108 C8	3122 E4	3126 D6	6103-A B5	7103 A5	7120-B D5	F104 C2	F108 C2	F112 D2	I105 B6	I111 C9	I126 D6
1320 B1	3101 A4	3105 B6	3109 B8	3123 E5	3127 E7	6103-B B6	7105 A6	F101 C2	F105 C2	F109 D2	I102 A4	I106 A7	I120 E5	I127 D7
2107 B8	3102 A5	3106 B7	3120 D4	3124 E5	5100 C2	6105 B7	7107 B10	F102 C2	F106 C2	F110 A5	I103 A5	I107 B7	I123 E5	
2120 D5	3103 B5	3107 C8	3121 E4	3125 E6	6101 A5	6127 E7	7120-A D6	F103 C2	F107 C2	F111 A6	I104 B5	I109 B9	I125 D6	

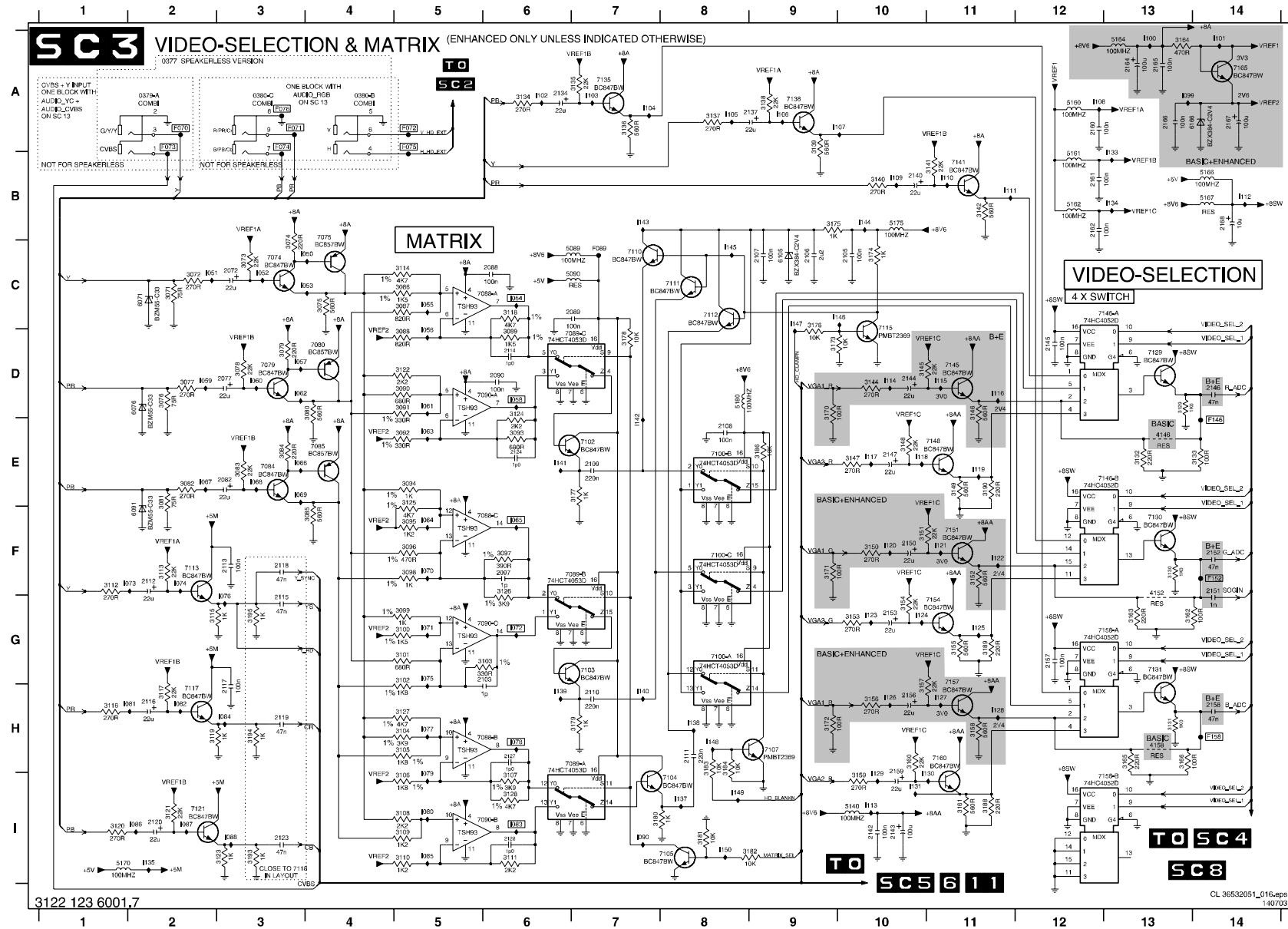


SCAVIO Panel: Function Blocks and Diagram Connections

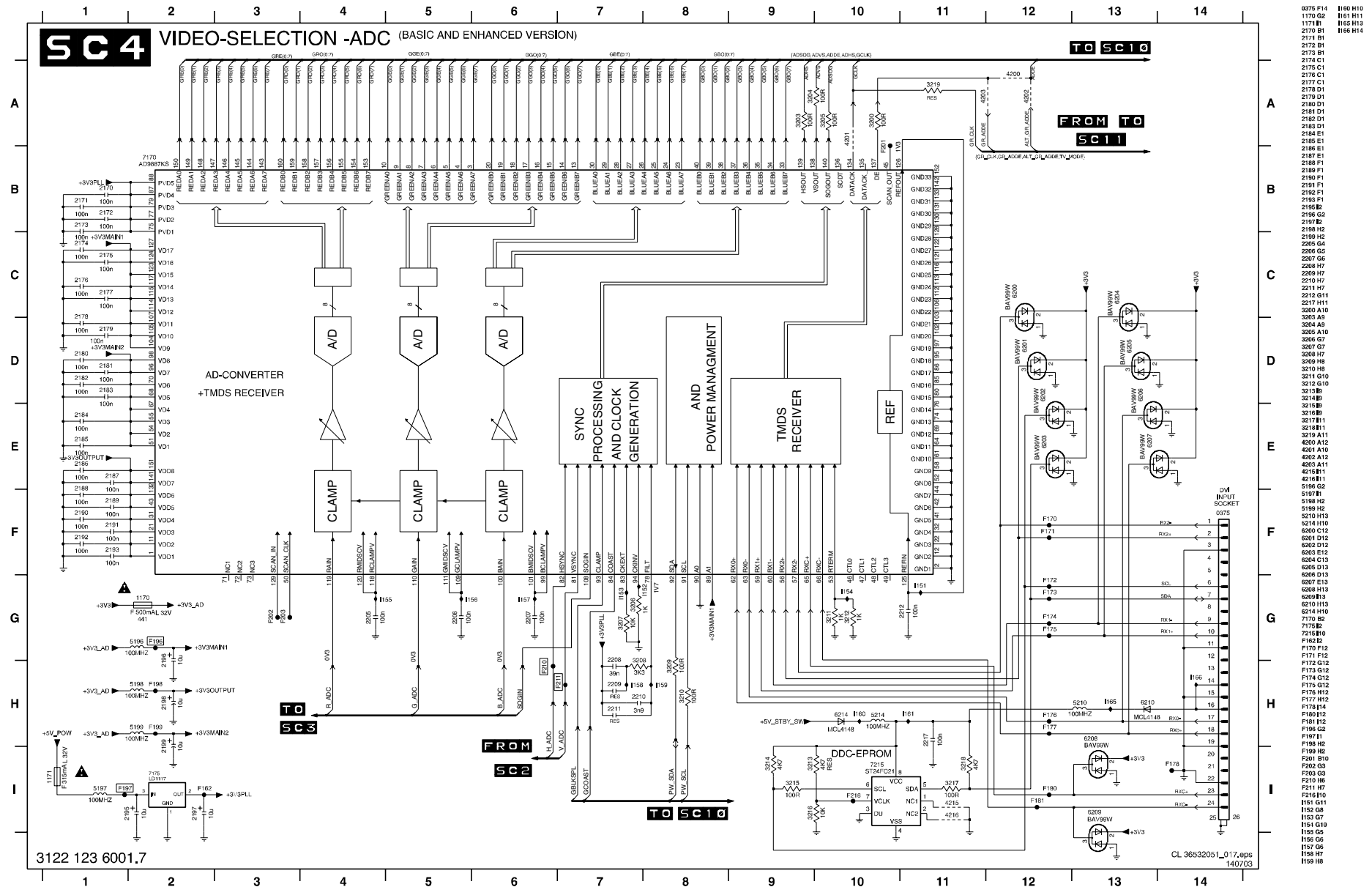


1002 I7	R04 E5
1007 I7	R05 F13
2000 A3	R16 F13
2000 A3	R07 F8
2007 B4	R16 F8
2007 B5	R10 F4
2003 C6	R020 F8
2007 C6	R01 F7
2005 E2	R022 G10
2007 F11	R023 G4
2007 F11	R03 G4
2009 B12	R025 G10
2012 E5	R028 G11
2007 G5	R027 H8
2008 F5	R028 H13
2007 F4	R027 H8
2007 F4	R031 H4
2002 G4	R032 H6
2004 H4	R033 H10
2004 H6	R034 H6
2004 H6	R035 H4
2005 I9	R036 H13
2007 I9	R037 I13
2007 I9	R038 A12
2006 E14	R039 G9
2006 E14	R040 D10
2001 C2	A01 A10
3002 C4	
3003 C5	
3004 C5	
3005 C6	
3006 C6	
3007 E10	
3007 E5	
3010 E2	
3017 E2	
3011 D4	
3002 D5	
3013 E5	
3014 D6	
3015 E2	
3019 B9	
3020 F4	
3021 F4	
3022 G4	
3023 G4	
3024 G4	
3025 G6	
3026 G6	
3027 G6	
3030 H4	
3031 H4	
3032 H4	
3033 H4	
3034 H6	
3035 H6	
3036 H6	
3037 H7	
3041 F8	
3042 F8	
3043 F8	
3044 H7	
3045 G9	
3046 G9	
3051 G10	
3052 G10	
3053 H12	
3054 G12	
3055 E2	
3061 H13	
3065 F13	
3066 F13	
4006 B8	
4007 B8	
4009 E13	
4010 C13	
5000 A3	
5007 F11	
5009 A12	
5009 A12	
5009 H10	
6007 C1	
6009 C11	
6007 E9	
6019 B9	
6022 G5	
6023 G5	
7000 B4	
7001 B9	
7002 B9	
7006 C2	
7007 C2	
7007 C11	
7008 A13	
7009 A13	
7010 E2	
7002 H5	
7002 H5	
7004 B9	
7011 G10	
7006 H13	
7007 H13	
B00 A3	
B01 F11	
B02 A5	
B03 B6	
B04 B6	
B05 B6	
B06 C6	
B07 C6	
B08 D2	
B09 D6	
B10 E2	
B11 D6	
B12 E2	
B13 E2	

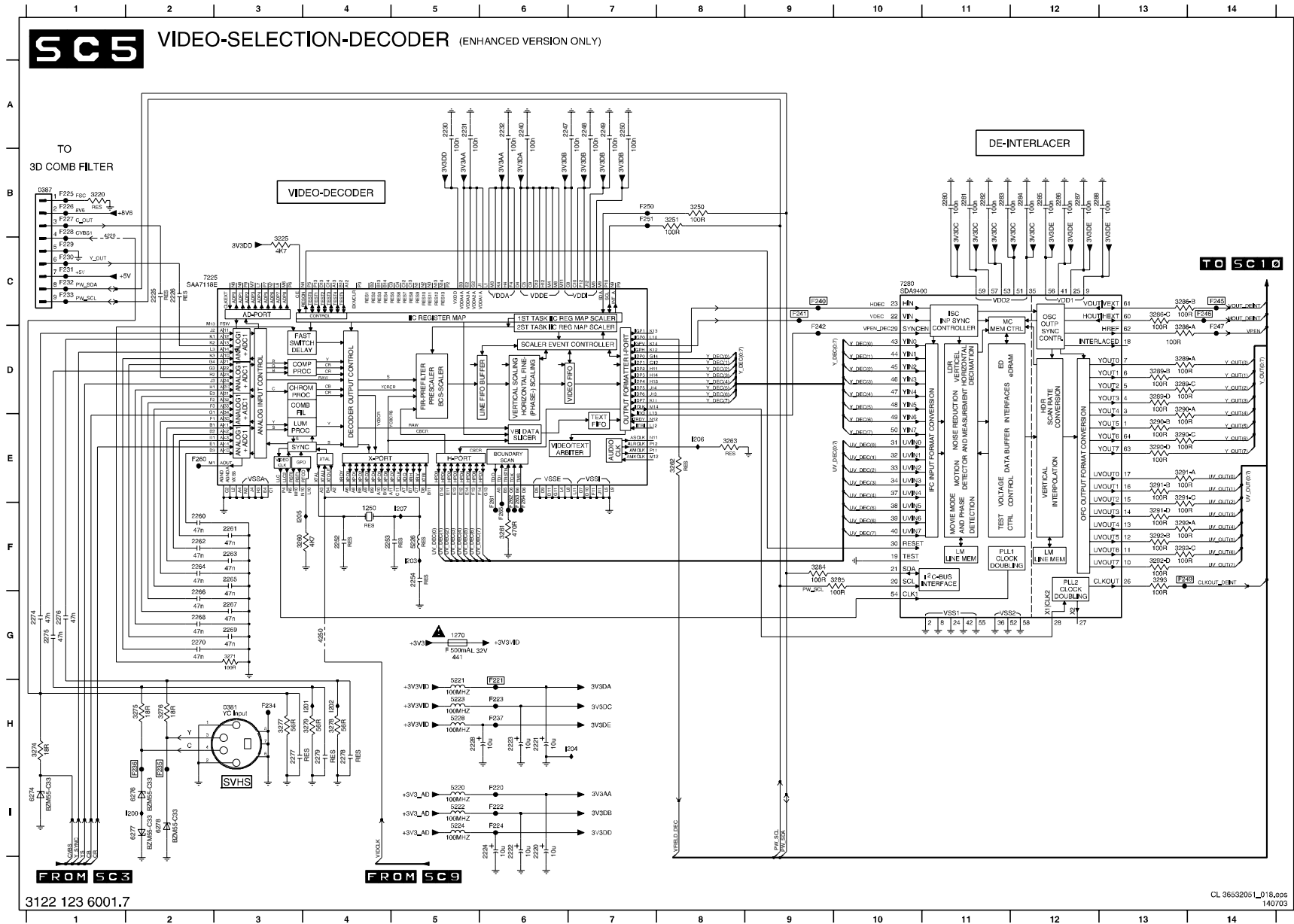
SCAVIO Panel: Video Selection & Matrix



SC4 VIDEO-SELECTION -ADC (BASIC AND ENHANCED VERSION)

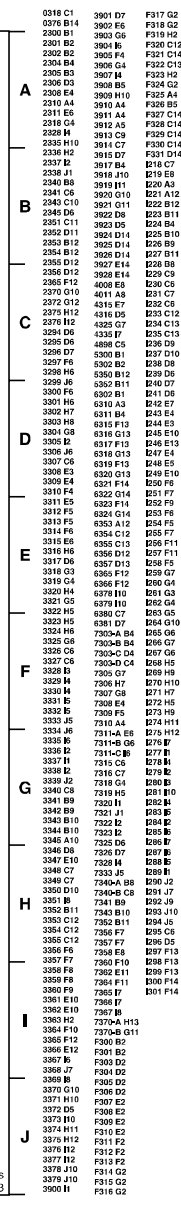


SCAVIO Panel: Video Selection Decoder

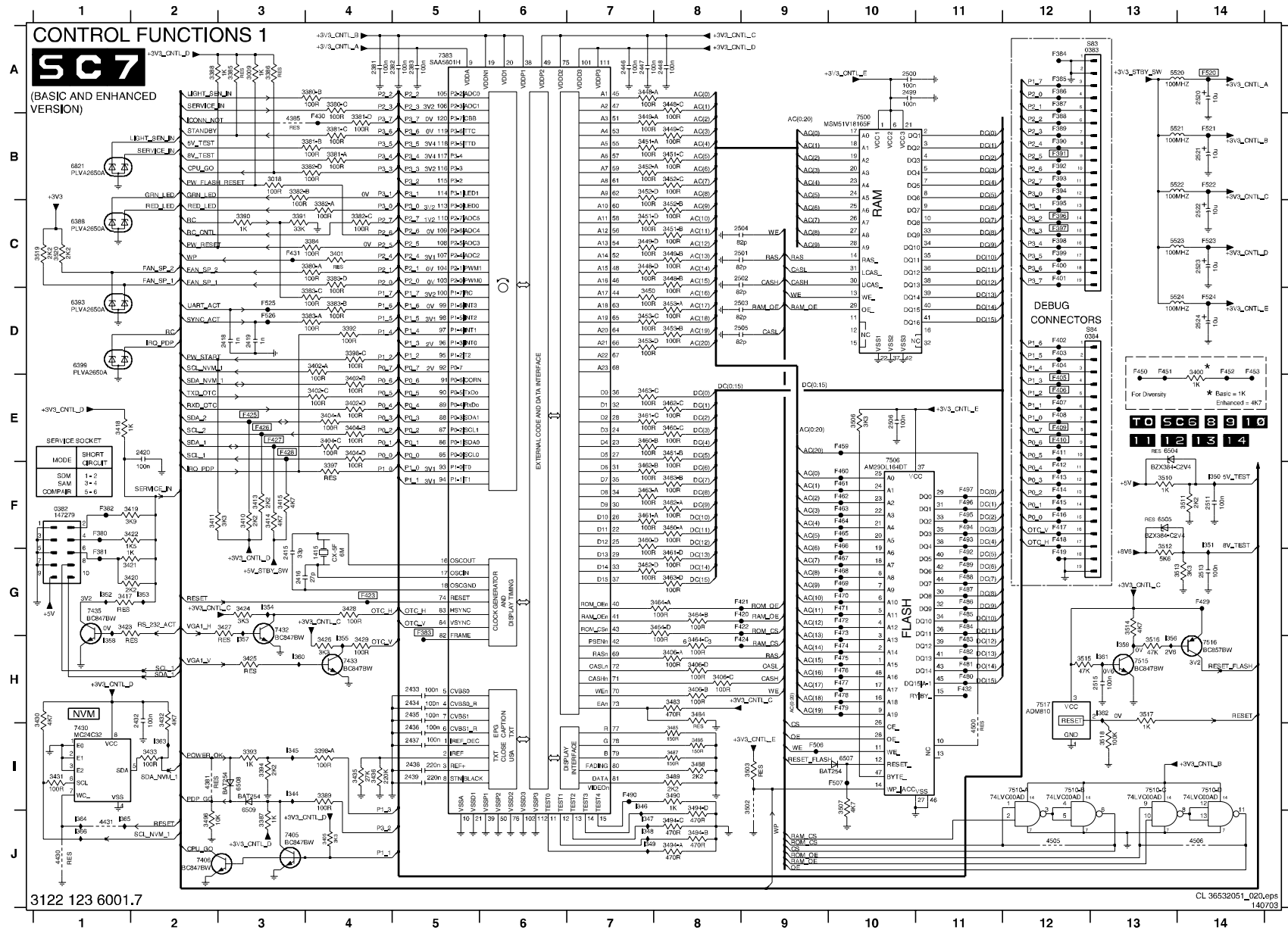


VGA INPUT

(BASIC AND ENHANCED VERSION)



SCAVIO Panel: Control Functions 1



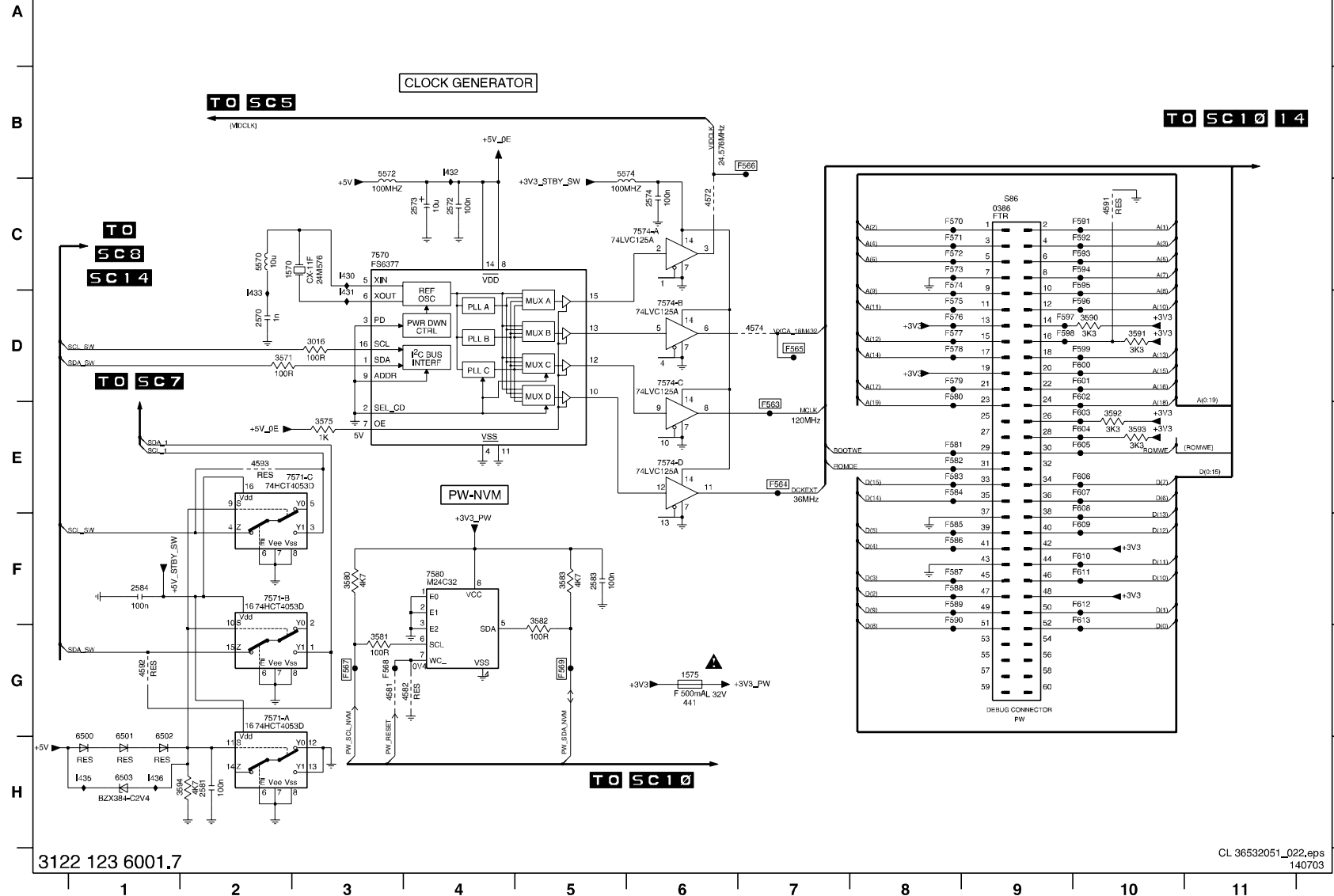
TO
0319
P 3
POWER
SUPPLY



CL 36532051_021.eps

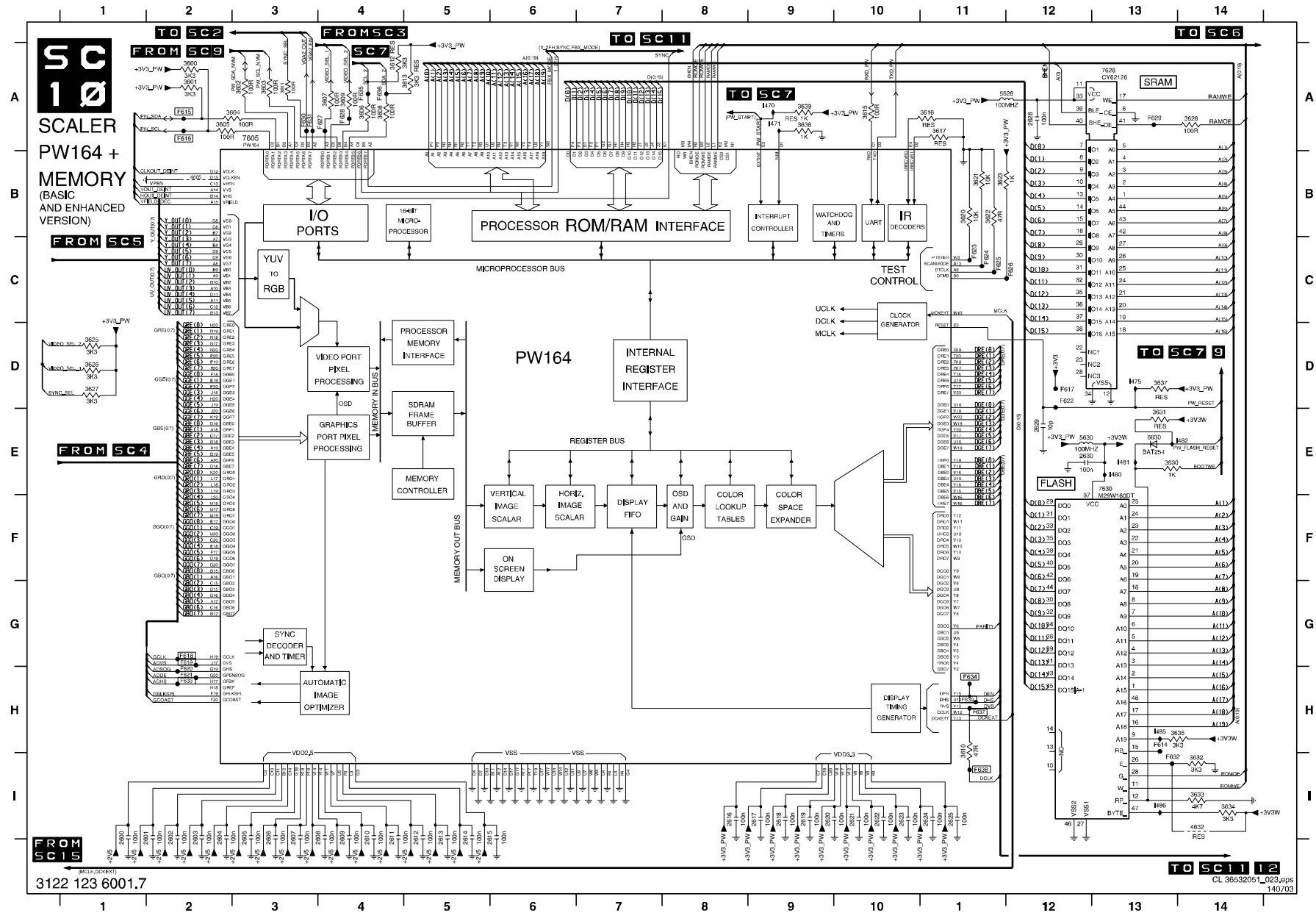
0305 C2	F549 F2
0315 H5	F550 F2
0316 H5	F551 F2
0319 E2	F552 F2
0320 B2	F553 F2
0321 H5	F554 F2
0323 H5	F555 G2
0326 H5	F556 G2
0327 H5	F557 G2
0328 H5	F558 H5
0329 H5	F559 H5
0330 H5	F560 H5
0331 H5	F561 H5
0332 H5	F562 G2
0333 H5	F563 G2
0334 H5	F564 G2
0335 H5	F565 G2
0336 H5	F566 G2
0337 H5	F567 G2
0338 H5	F568 G2
0339 H5	F569 G2
0340 H5	F570 G2
0341 H5	F571 G2
0342 H5	F572 G2
0343 H5	F573 G2
0344 H5	F574 G2
0345 H5	F575 G2
0346 H5	F576 G2
0347 H5	F577 G2
0348 H5	F578 G2
0349 H5	F579 G2
0350 H5	F580 G2
0351 H5	F581 G2
0352 H5	F582 G2
0353 H5	F583 G2
0354 H5	F584 G2
0355 H5	F585 G2
0356 H5	F586 G2
0357 H5	F587 G2
0358 H5	F588 G2
0359 H5	F589 G2
0360 H5	F590 G2
0361 H5	F591 G2
0362 H5	F592 G2
0363 H5	F593 G2
0364 H5	F594 G2
0365 H5	F595 G2
0366 H5	F596 G2
0367 H5	F597 G2
0368 H5	F598 G2
0369 H5	F599 G2
0370 H5	F600 G2
0371 H5	F601 G2
0372 H5	F602 G2
0373 H5	F603 G2
0374 H5	F604 G2
0375 H5	F605 G2
0376 H5	F606 G2
0377 H5	F607 G2
0378 H5	F608 G2
0379 H5	F609 G2
0380 H5	F610 G2
0381 H5	F611 G2
0382 H5	F612 G2
0383 H5	F613 G2
0384 H5	F614 G2
0385 H5	F615 G2
0386 H5	F616 G2
0387 H5	F617 G2
0388 H5	F618 G2
0389 H5	F619 G2
0390 H5	F620 G2
0391 H5	F621 G2
0392 H5	F622 G2
0393 H5	F623 G2
0394 H5	F624 G2
0395 H5	F625 G2
0396 H5	F626 G2
0397 H5	F627 G2
0398 H5	F628 G2
0399 H5	F629 G2
0400 H5	F630 G2
0401 H5	F631 G2
0402 H5	F632 G2
0403 H5	F633 G2
0404 H5	F634 G2
0405 H5	F635 G2
0406 H5	F636 G2
0407 H5	F637 G2
0408 H5	F638 G2
0409 H5	F639 G2
0410 H5	F640 G2
0411 H5	F641 G2
0412 H5	F642 G2
0413 H5	F643 G2
0414 H5	F644 G2
0415 H5	F645 G2
0416 H5	F646 G2
0417 H5	F647 G2
0418 H5	F648 G2
0419 H5	F649 G2
0420 H5	F650 G2
0421 H5	F651 G2
0422 H5	F652 G2
0423 H5	F653 G2
0424 H5	F654 G2
0425 H5	F655 G2
0426 H5	F656 G2
0427 H5	F657 G2
0428 H5	F658 G2
0429 H5	F659 G2
0430 H5	F660 G2
0431 H5	F661 G2
0432 H5	F662 G2
0433 H5	F663 G2
0434 H5	F664 G2
0435 H5	F665 G2
0436 H5	F666 G2
0437 H5	F667 G2
0438 H5	F668 G2
0439 H5	F669 G2
0440 H5	F670 G2
0441 H5	F671 G2
0442 H5	F672 G2
0443 H5	F673 G2
0444 H5	F674 G2
0445 H5	F675 G2
0446 H5	F676 G2
0447 H5	F677 G2
0448 H5	F678 G2
0449 H5	F679 G2
0450 H5	F680 G2
0451 H5	F681 G2
0452 H5	F682 G2
0453 H5	F683 G2
0454 H5	F684 G2
0455 H5	F685 G2
0456 H5	F686 G2
0457 H5	F687 G2
0458 H5	F688 G2
0459 H5	F689 G2
0460 H5	F690 G2
0461 H5	F691 G2
0462 H5	F692 G2
0463 H5	F693 G2
0464 H5	F694 G2
0465 H5	F695 G2
0466 H5	F696 G2
0467 H5	F697 G2
0468 H5	F698 G2
0469 H5	F699 G2
0470 H5	F700 G2
0471 H5	F701 G2
0472 H5	F702 G2
0473 H5	F703 G2
0474 H5	F704 G2
0475 H5	F705 G2
0476 H5	F706 G2
0477 H5	F707 G2
0478 H5	F708 G2
0479 H5	F709 G2
0480 H5	F710 G2
0481 H5	F711 G2
0482 H5	F712 G

SCAVIO Panel: Scaler Clock Generator

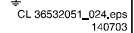
SC9**SCALER-CLOCK-GENERATOR**
(BASIC AND ENHANCED VERSION)

0386 C9
1570 C2
1575 G8
2570 D2
2572 C4
2573 C4
2574 C6
2581 H2
2583 F5
2584 F1
3016 D3
3571 D2
3575 E3
3580 F3
3581 G3
3582 F5
3583 F5
3590 D10
3591 D10
3592 E10
3593 E10
3594 H2
4572 C6
4574 D7
4581 G3
4582 G4
4591 C10
4592 G1
4593 E2
5570 C2
5572 B3
5574 B5
6500 G1
6501 G1
6502 G1
6503 H1
7570 C3
7571-A G2
7571-B F2
7571-C E3
7574-A G8
7574-B D6
7574-C D6
7574-D E8
7580 F4
F553 E7
F554 E7
F555 D7
F556 B7
F557 G3
F558 G3
F559 G5
F570 C5
F571 C8
F572 C8
F573 C8
F574 C5
F575 D8
F576 D8
F577 D8
F578 D8
F579 D8
F580 D8
F581 E8
F582 E8
F583 E8
F584 E8
F585 F8
F586 F8
F587 F8
F588 F8
F589 F8
F590 F8
F591 C10
F592 C10
F593 C10
F594 C10
F595 C10
F596 D10
F597 D9
F598 D9
F599 D10
F600 D10
F601 D10
F602 D10
F603 E10
F604 E10
F605 E10
F606 E10
F607 E10
F608 E10
F609 F10
F610 F10
F611 F10
F612 F10
F613 F10
M30 C3
M31 D3
M32 B4
M33 D2
M35 H1

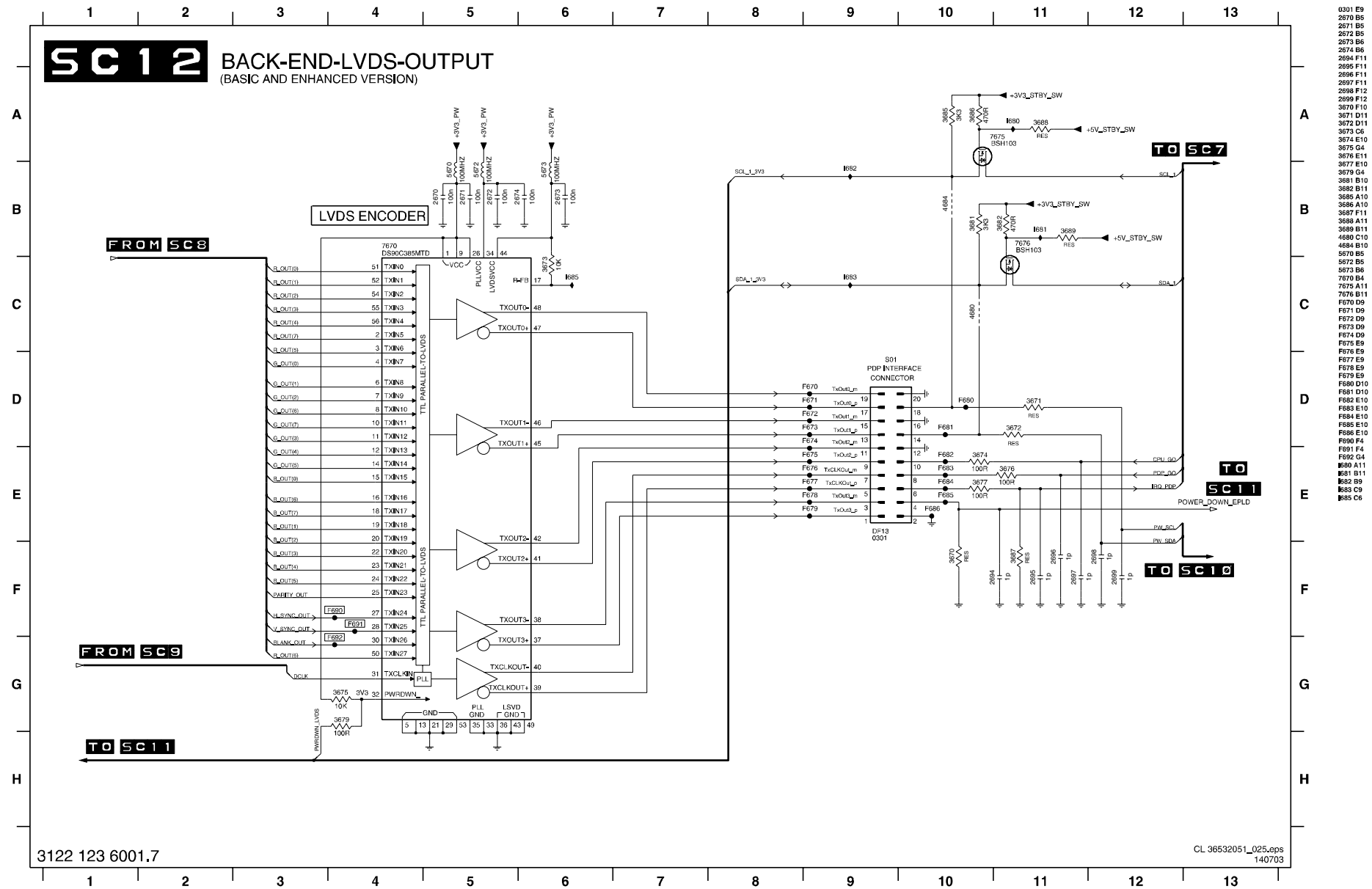
SCAVIO Panel: PW164 Scaler and Memory



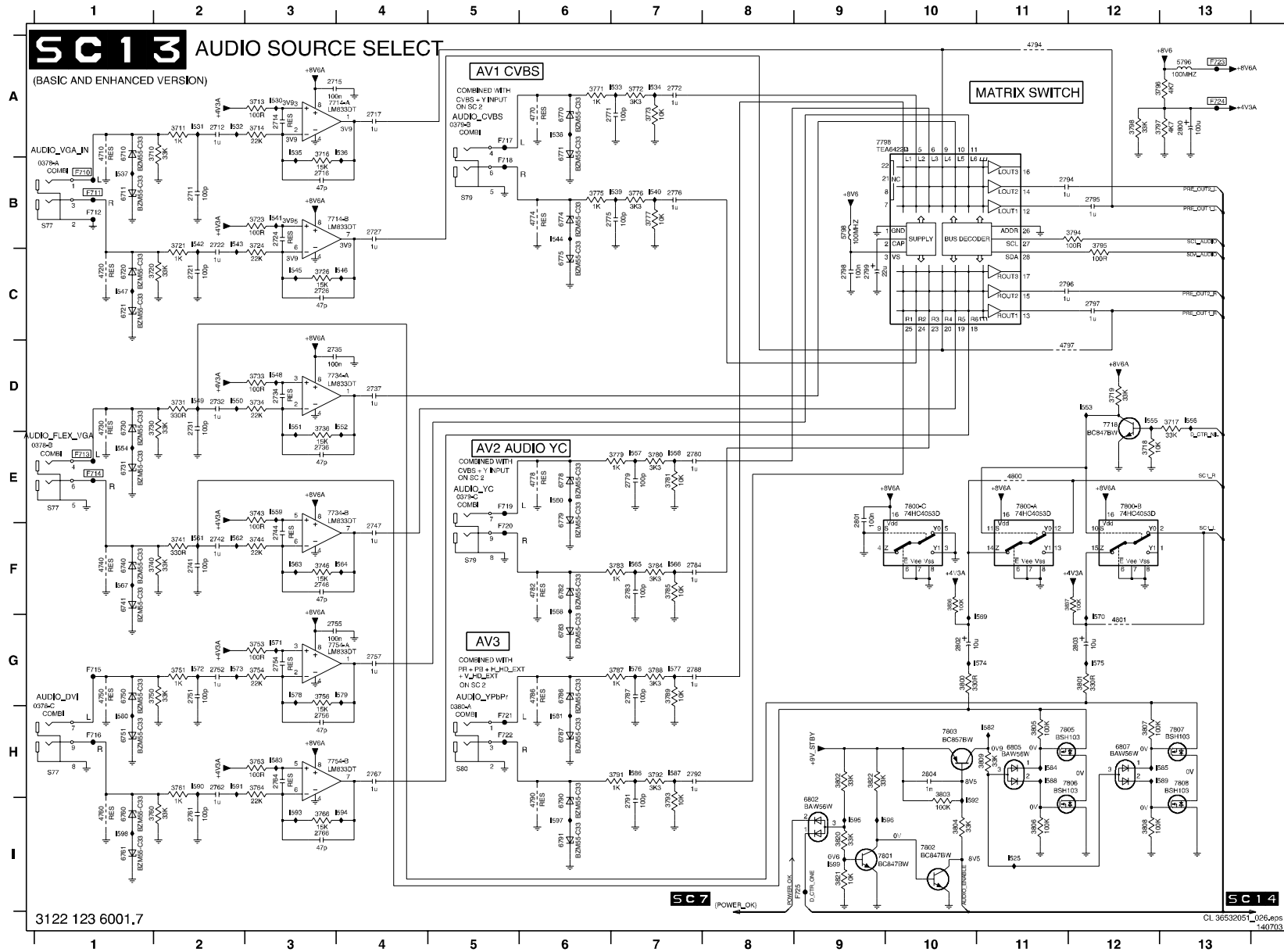
(BASIC AND ENHANCED VERSION)



SCAVIO Panel: Back-End LVDS Output

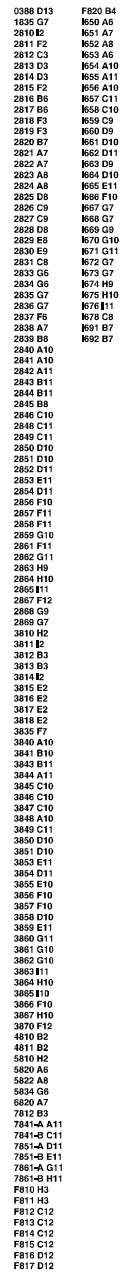


SCAVIO Panel: Audio Source Select

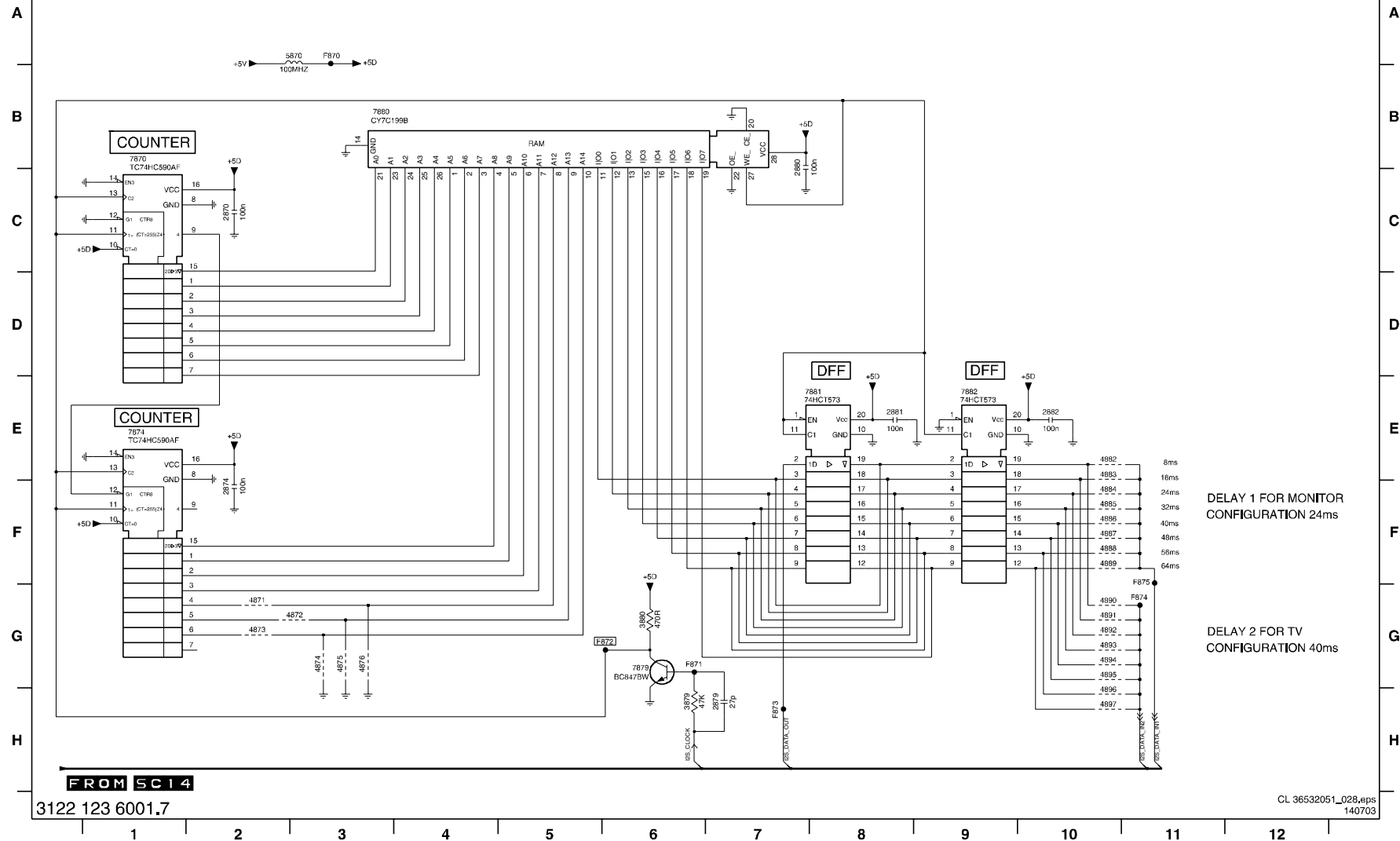


0378-A B1	3800 G10	E553 D12
0378-B E1	3801 G12	E554 E1
0378-C G1	3802 H9	E555 D12
0378-B A5	3803 H10	E556 D13
0378-C E5	3804 H10	E557 E7
0380-A G5	3805 H11	E558 E7
2711 B2	3806 H11	E559 E3
2712 A2	3807 H12	E560 E8
2714 A3	3808 I12	E561 F2
2715 A3	3809 H11	E562 F2
2716 B3	3810 B9	E563 F3
2717 A4	3821 B9	E564 F4
2721 C2	3822 B9	E565 F7
2722 D2	3836 F10	E566 F7
2724 B3	3837 F12	E567 F1
2726 C3	4710 A1	E568 F6
2727 B4	4720 C1	E569 G11
2731 D2	4730 D1	E570 G12
2732 D2	4740 F1	E571 G3
2734 D3	4750 G1	E572 G2
2735 D3	4760 H1	E573 G2
2736 E3	4770 A6	E574 G11
2737 D4	4774 B6	E575 G12
2741 F2	4778 E6	E576 G7
2742 F2	4782 F6	E577 G7
2744 F3	4786 G6	E578 G3
2746 F3	4790 H6	E579 G4
2747 F4	4794 A11	E580 H1
2751 G2	4797 D11	E581 H6
2752 G2	4800 E11	E582 H11
2754 G3	4801 G12	E583 H3
2755 G3	4796 A3	E584 H11
2756 H3	5798 D9	E585 H13
2757 G4	6710 A1	E586 H7
2761 B5	6711 B1	E587 H7
2762 H2	6720 C1	E588 H11
2764 H3	6721 C1	E589 H13
2766 B5	6730 D1	E590 H2
2767 H4	6731 E1	E591 H2
2769 F1	6740 F1	E592 B10
2772 A7	6741 F1	E593 B5
2775 B8	6750 G1	E594 B6
2776 B7	6751 H1	E595 B8
2779 E7	6760 B1	E596 B10
2780 E7	6761 B1	E597 B6
2783 F7	6770 A6	E598 B7
2784 F7	6771 A6	E599 B8
2787 G7	6774 B6	
2788 G7	6775 C6	
2791 F7	6778 E6	
2792 H7	6779 E6	
2794 B11	6782 F6	
2795 B12	6783 G6	
2796 C11	6786 G6	
2797 C12	6787 H6	
2798 C9	6790 B6	
2799 C9	6791 B6	
2800 A13	6802 B9	
2801 E9	6805 H11	
2802 G10	6807 H12	
2803 G12	7714-A A3	
2804 H10	7714-B B2	
3710 A2	7718 D12	
3711 A2	7724-A D3	
3713 A3	7734-B E5	
3714 A3	7754-A G3	
3716 A3	7754-B H3	
3717 D13	7758 A6	
3718 E12	7800-A E11	
3719 D12	7800-A E12	
3720 C2	7800-C E10	
3721 B2	7801 B8	
3723 B8	7802 B10	
3724 B8	7803 H10	
3725 C3	7806 H11	
3730 D2	7806 H12	
3731 D2	7807 H13	
3733 D3	7808 H13	
3734 D3	7710 B1	
3736 D3	7711 B1	
3740 F2	7712 B1	
3741 F2	7713 E1	
3743 E3	7714 E1	
3744 F3	7715 G1	
3746 F3	7716 H1	
3750 G2	7717 A5	
3751 G2	7718 B5	
3753 G3	7719 E5	
3754 G3	7720 F5	
3756 G3	7721 H5	
3760 B5	7722 H5	
3761 H2	7723 A13	
3763 H3	7724 A13	
3764 H3	7725 B9	
3766 B5	E551 H1	
3771 A6	E530 A3	
3772 A7	E531 A2	
3773 A7	E532 A2	
3775 B6	E533 A7	
3776 B7	E534 A7	
3777 B7	E535 A3	
3779 E7	E536 A4	
3780 E7	E537 B1	
3781 E7	E538 A6	
3783 F7	E539 B7	
3784 F7	E540 B7	
3785 F7	E541 B3	
3787 G7	E542 B2	
3788 G7	E543 B2	
3789 G7	E544 B6	
3791 H7	E545 C3	
3792 H7	E546 C4	
3793 H7	E547 C1	
3794 B12	E548 D3	
3795 B12	E549 D2	
3796 A13	E550 D2	
3797 A13	E551 D3	
3798 A12	E552 D4	

SC14 AUDIO PROCESSOR



SCAVIO Panel: Audio Delay Line

SC 15 AUDIO DELAY LINE
(BASIC AND ENHANCED VERSION)

2870 C2
2874 F2
2879 H7
2880 B7
2881 E8
2882 E10
3879 H6
3880 G6
4871 G2
4872 G3
4873 G2
4874 G3
4875 G3
4876 G3
4882 E10
4883 E10
4884 F10
4885 F10
4886 F10
4887 F10
4888 F10
4889 F10
4890 G10
4891 G10
4892 G10
4893 G10
4894 G10
4895 G10
4896 G10
4897 H10
5870 A3
7870 B1
7874 E1
7879 G6
7880 B3
7881 E7
7882 E9
F870 A3
F871 G6
F872 G6
F873 H7
F874 G11
F875 F11

DELAY 1 FOR MONITOR
CONFIGURATION 24ms

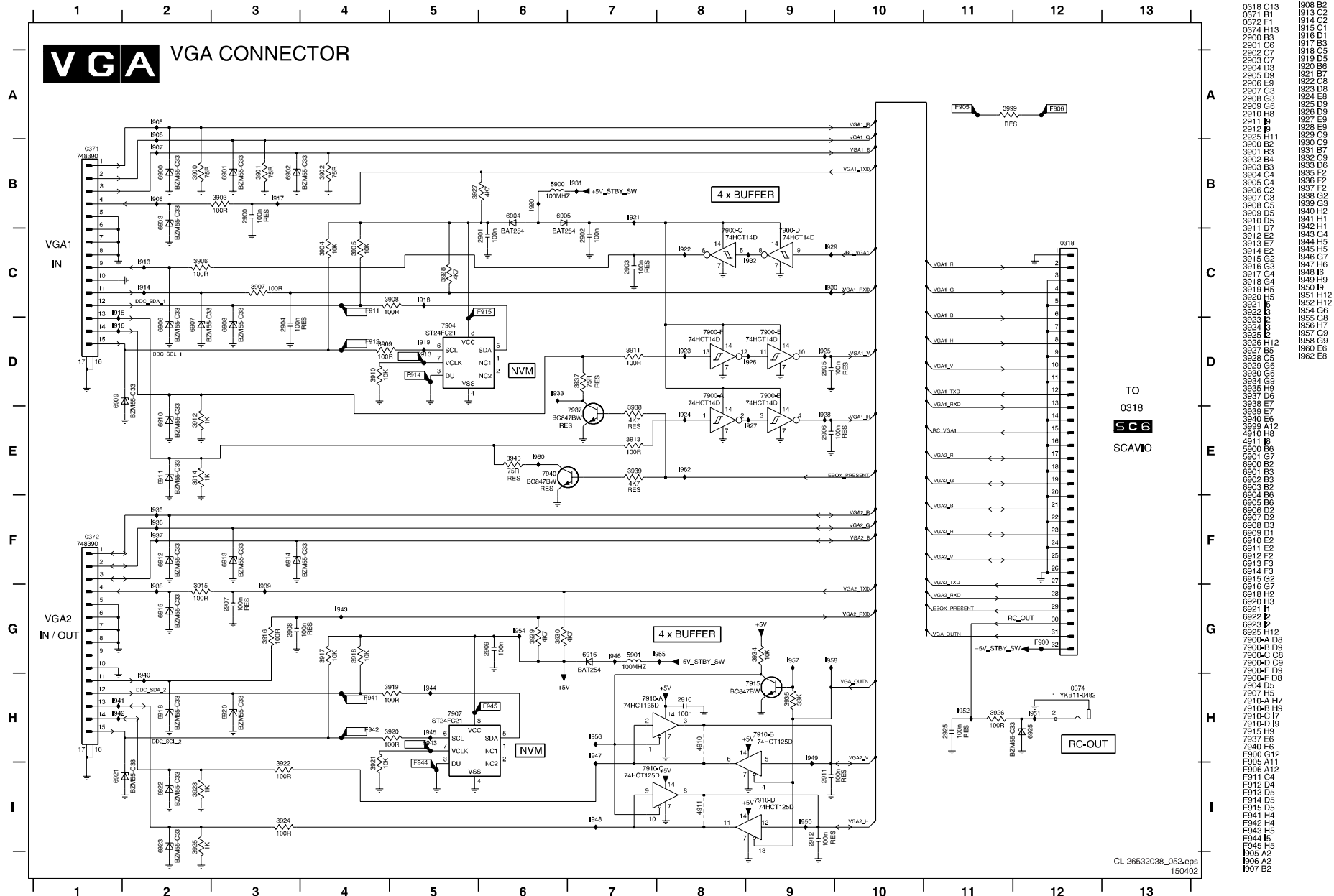
DELAY 2 FOR TV
CONFIGURATION 40ms

FROM SC 14

3122 123 6001.7

CL 36532051_028.eps
140703

VGA Connector Panel



8. Alignments

Index of this chapter:

1. General Alignment Conditions
2. Hardware Alignments
3. Software Alignments and Settings

Note: The Service Default Mode (SDM) and Service Alignment Mode (SAM) are described in chapter "Service Modes". Menu navigation is done with the "CURSOR UP, DOWN, LEFT or RIGHT" keys of the remote control transmitter.

8.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Mains voltage and frequency: 220 V_{AC} / 50 Hz unless otherwise stated.
- Connect the set to the Mains via an isolation transformer.
- Allow the set to warm up for approximately 20 minutes.
- Measure the voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary

side of the power supply). Never use the cooling fins/plates as ground.

- Test probe: Ri > 10 MΩ, Ci < 2.5 pF.
- Use an isolated trimmer/screwdriver to perform the alignments.

Use a VGA-generator or a Personal Computer (contact your National Service Organisation for the necessary test pattern files) as test pattern generator and connect it to the VGA1 input of the FM242 plasma monitor. When you use a PC, start Microsoft PowerPoint (or Paintbrush), and load the mentioned file. Then display the picture as full screen.

8.2 Hardware Alignments

There no alignments needed, except in care the pdp has been exchanged or the pdp-supply has been exchanged. In that case the both must be matched.

Voltage Label

8.5 cm						
VS	VA	VSET	VE	VSC		
adjusted	adjusted	adjusted	adjusted	adjusted		Adjusted
VSB	3.3SBSW	VCC	D5V	8V6	VFAN	
5.2V	3.3V	3.3V	5.2V	8.6V	9.5V	Fixed

VOLTAGE ADJUST DIRECTION

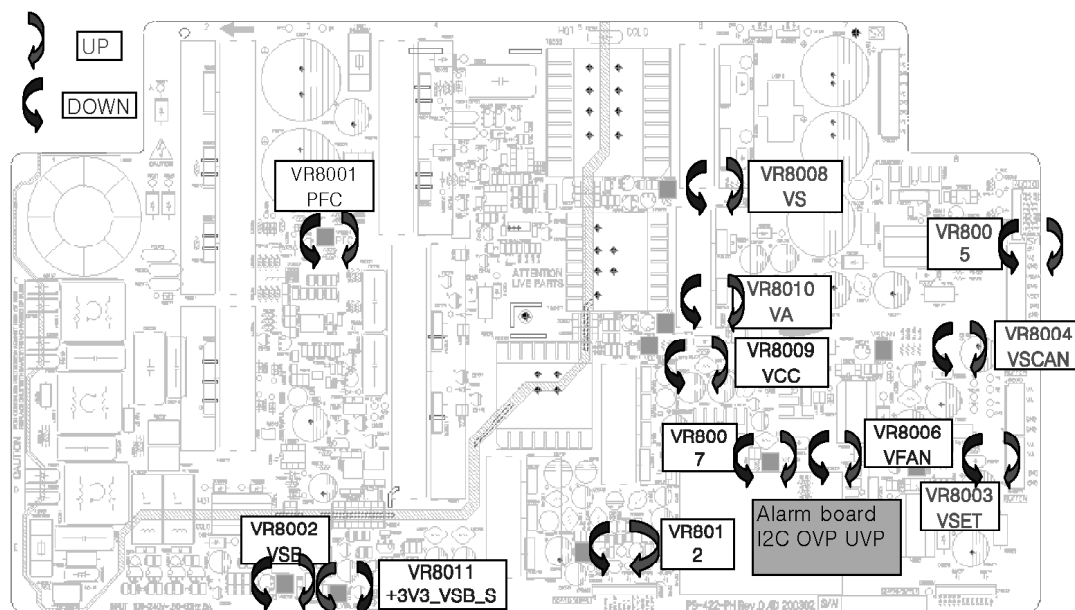


Figure 8-1 Supply Alignment

Procedure:

- See figure above
- The 6 pot meters influencing VSB, 3.3SBSW, VCC, D5V, 8V6, VFAN are not critical for matching. In case of doubt values can be checked versus mentioned voltages.
- The 5 pot meters VS, VA, VSET, VE, VSC have to be matched with the values displayed on the pdp-label.
- Start with aligning pot meter VR8008 to adjust VS and then respectively VR8010 (VA), VR8003 (VSET), VR8005 (VE), VR8004 (VSCAN)
- To double check, repeat whole sequence again, to check right value

8.3 Software Alignments

Enter the Service Alignment Mode (see chapter 5). The SAM menu will now appear on the screen.

Select one of the following alignment menus via the upper horizontal bar:

1. Scaler (Scal.)
2. Video 1 (Vid.1)
3. Video 2 (Vid.2)
4. Options (Opt.)

Note: the last three items are not available in the *Basic* configuration.

8.3.1 General

Table 8-1 SAM Menu "Gen."

Service Alignment Menu	General
Type nr. - AG Code	42FD9945/01 **00 00
SW version OTC	AAAAAB-X.Y xxxxx
SW version PW	AAAABC-X.Y xxxxx
SW version EPLD	AAAABC-X.Y xxxxx
Errors 1	xx xx xx xx xx
Errors 2	xx xx xx xx xx
Operational hours	xx
Reset error buffer	Press OK to reset
Store	Press OK to store

Store

Select this item, and press OK, to store the made alignments.

Note: There are several methods to exit the SAM, each with its own characteristics:

- Switch the set "off" (with the Mains switch or by pulling the Mains cord); new alignment settings are **always** stored, even when item "store" was not activated!
- Switch the set to "Standby" by pressing the power button on the remote control transmitter; new alignment settings are **always** stored, even when item "store" was not activated!
- Use a standard RC-transmitter and key in the code **00**; new alignment settings are **not** stored, except when item "store" was activated!

8.3.2 Scaler

Table 8-2 SAM Menu "Scal."

Service Alignment Menu	Scaler
Test pattern	On / Off
Color temperature	6500K / 8700K / 10000K
White point	Adjust ...
Align ADC	Press OK to execute
Clear user settings	Press OK to clear

The lower 2 menu lines, only are valid when having a VGA-source. (otherwise low lighted)

Test pattern

This function makes it possible to generate a "colour bar" test pattern (generated by the PW Scaler IC). You can use this picture, to check the video path, starting at the PW Scaler IC to the plasma display.

Colour temperature

Select the appropriate colour temperature for the alignments (see also "White point" adjustment below).

White Point

Table 8-3 SAM Menu "Scaler - White Point"

Service Alignment Menu	Scaler - White point
White point red	<----- -----> 125
White point green	<----- -----> 100
White point blue	<----- -----> 110
Press OK when done	

Method 1 (with colour analyser)

1. Supply, via an external VGA source (e.g. a PC with 1024x768 mode, or a VGA generator), a "White Drive" test pattern (ask your NSO). This picture consists of a black picture with in the middle a 100% white square.
2. Set BRIGHTNESS to "53" and CONTRAST to "65" (via the standard customer menu).
3. Go to the SAM menu.
4. Set COLOUR TEMPERATURE to "8700 K".
5. Measure with a CTV colour analyser (calibrated with the spectra) on the centre of the white square on the screen.
6. Select "White point" in the SAM Scaler menu, and press CURSOR RIGHT.
7. Adjust with the CURSOR UP/DOWN or LEFT/RIGHT command, the three white points Red, Green and Blue to "128" (do **not** go above this value!), and align with one or two of the drivers to the correct coordinates (see table).
8. Repeat the same measurement for respectively colour temperature "6500 K" and "10000 K".
9. Repeat again if necessary.

Table 8-4 White Point XY-coordinates

Colour Temperature	x	y
5600 K (Cool)	313	329
8700 K (Normal)	289	299
10000 K (Warm)	280	289

Method 2 (without colour analyser)

Without a CTV colour analyser, it is possible to set some parameters, which are based on average values from production.

These values will be communicated in a later stage.

Table 8-5 White point RGB-values

Colour Temperature	R	G	B
5600 K (Cool)			
8700 K (Normal)			
10000 K (Warm)			

Align ADC

1. Supply, via an external VGA source (e.g. a PC, mode 1024x768), the "ADC alignment" test pattern (retrieve this file of the NSO). This picture consists of a half black and

half white picture: black is 16, and white is 235 on a full scale of 255 (=770 mV).

- Go to the SAM menu.
- Select "Align ADC" in the SAM Scaler menu, and press CURSOR RIGHT.
- The alignment is performed automatically.

8.3.3 Video 1 (Enhanced version only)

Table 8-6 SAM Menu "Vid. 1"

Service Alignment Menu	Video 1
Test pattern	On / Off
Brightness	0 <----- ----- > 255
Contrast	0 <----- ----- > 255
Sharpness	0 <----- ----- > 255

Test pattern

This function makes it possible to generate a "full white" test pattern (generated by the de-interlacer SDA9400, item 7280). You can use this picture, to check the video path of the external inputs AV1, 2 and 3, starting at item 7280

Note: The proper functioning of the Digital Video Decoder SAA7118 is not tested!

Note: To generate the test pattern, it is necessary to feed a signal to one of the AV-inputs. (if not the menu lines are low lighted)

Brightness

This is the setting of IC7225 (SAA7118). Not necessary to align, fixed value is:

- PAL/SECAM: 132
- NTSC: 139

Contrast

This is the setting of IC7225 (SAA7118). Not necessary to align, fixed value is:

- PAL/SECAM: 139
- NTSC: 128

Sharpness

Not necessary to align, fixed value is 6.

8.3.4 Video 2 (Enhanced version only)

Table 8-7 SAM Menu "Vid. 2"

Service Alignment Menu	Video 2
Lum. delay PAL	0 <----- ----- > 7
Lum. delay SECAM	0 <----- ----- > 7
Lum. delay NTSC	0 <----- ----- > 7

With the "Luminance delays" alignment, you can place the luminance information on the chrominance information (push brightness onto the colour). Use a colour bar/grey scale pattern as test signal.

These values are normally fixed.

Lum. delay PAL

Apply a PAL colour bar/grey scale pattern as a test signal. Adjust value until the transients of the colour part and black and white part of the test pattern are at the same position. Fixed value is 4.

Lum. delay SECAM

Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust value until the transients of the colour part and black and white part of the test pattern are at the same position. Fixed value is 4.

Lum. delay NTSC

Apply a NTSC colour bar/grey scale pattern as a test signal. Adjust value until the transients of the colour and black & white part of the test area are at the same position. Fixed value is 4.

8.3.5 Options (Enhanced version only)

Table 8-8 SAM Menu "Opt."

Service Alignment Menu	Options
Vs/Va control	
Display size	
Virgin	On / Off
ICONN control	On / Off
Fan control	

Virgin

Normally "off". When this option is set to "on", the display starts with the language selection menu.

ICONN control

Normally "off". Set this option to "on" in case a so-called "ICONN"-box (for Hotel TV) is connected to the display.

Caution: When this option is set to "on", **without an ICONN-Box** connected to the monitor, one cannot control the monitor anymore (because the RC connection is interrupted).

There are two ways to restore the remote control again:

- Connect pin 8 (IR_TX) to pin 9 (IR_RX) on the RS232 connector of the monitor (the easiest way to do this, is to make a "dummy" connector with these pins connected, and plug this into the monitor), or
- Set the set in the Service Alignment Mode (SAM) via **shorting jumpers 1 and 2 of connector 0382** on the SCAVIO panel. After this you can enter the appropriate menu to set "ICONN control" to "off" again.

9. Circuit Descriptions and List of Abbreviations

Index of this chapter:

1. General
2. Power Supply unit (very limited)
3. VGA connector panel
4. SCAVIO panel
5. Audio Amplifier panel
6. LED/Switch panel
7. Plasma Display Panel
8. Abbreviations
9. IC Block diagrams

Notes:

- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

- The power supply has been exchanged by another supply-panel
- A new SCAVIO panel, which takes over the tasks of the former AVC and LIMESCO panels.
- A new class-D audio amplifier,
- A VGA-resolution pdp. It is possible to use this product as stand-alone monitor or, in combination with the so-called F21R Receiver box, for TV applications.

There are two configurations:

- Basic:** which has one video input (VGA1) and one video output (VGA2). The VGA2 video output is directly connected to the VGA1 video input, without any processing. The audio output of VGA2 is also directly connected to the VGA1 audio input.
- Enhanced:** which has six video inputs (VGA1, VGA2, DVI-D, CVBS, YC and HD) and six corresponding audio inputs. These inputs are internally converted to the appropriate signals. The VGA2 connection is here bi-directional (Flex-VGA).

9.1 General

The FM242 is the 3rd generation Philips plasma monitors. Related to the FM242 it is a cost down product. A lower specified pdp is used here (SDI-pdp), however performing still very acceptable. In comparison to the FTV1.9DE, it has:

Note: In all descriptions below, the *Enhanced* version of the FM242 is discussed. When there are important differences between the *Basic* and *Enhanced* versions, this is mentioned.

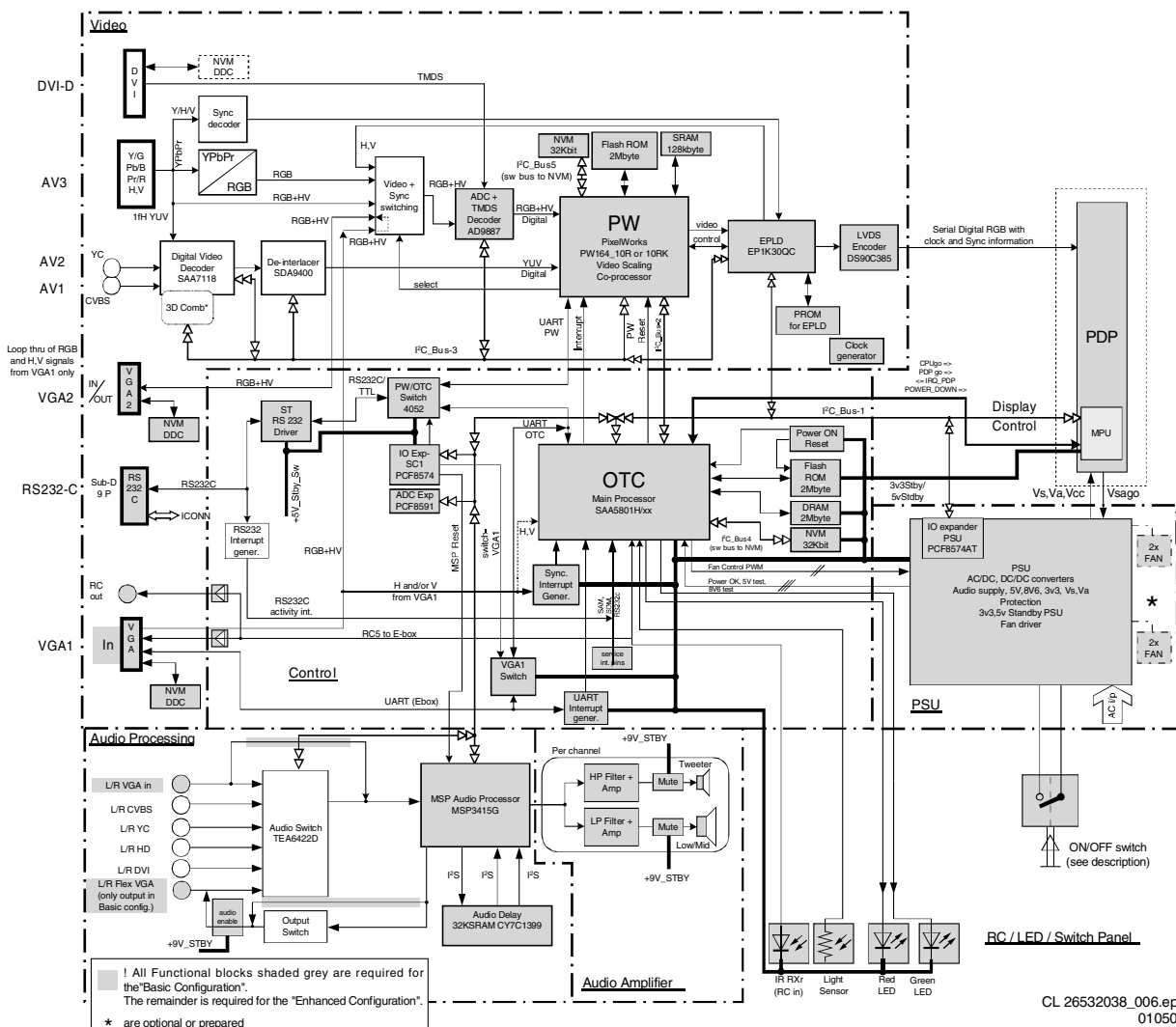


Figure 9-1 Control and Data Path

9.1.1 Input/Output

The main inputs are:

- **Basic:** VGA only,
- **Enhanced:** VGA, Flex-VGA, DVI-D, HD-RGB+HV, HD-2fH-YPbPr (sync on Y), 1fH-YCbCr (sync on Y), YC, CVBS on cinch. Flex-VGA gives the user a choice to configure the "loop-through VGA output" as an output or as input.

9.1.2 Video

This mainly consists of an analogue processing part and a digital processing part. The video inputs like VGA (*Basic* configuration), CVBS, YC, HD-RGB/YUV (1fH and 2fH) and DVI-D are received and processed.

The VGA signals are first converted to digital signals and then processed by the PW Scaler.

The YPbPr (2fH) signal is discretely converted to RGB, whereas the YCbCr (1fH) signal is processed in the SAA7118 Digital Video decoder.

The base-band video inputs (CVBS and YC) are output from this decoder as digital YUV, which are then further processed by the Pixel Works Scaler (PW).

The signals on the digital DVI input are first decoded by the TMDS decoder inside the AD9887 and then processed by the PW Scaler.

The PW Scaler output is going through an EPLD and then via an LVDS Encoder to the SDI PDP (Plasma Display Panel) as differential serial data. This PDP has a resolution of 852(H) x 480 (V) pixels.

9.1.3 Audio

This mainly hosts the audio inputs for the various video inputs. They go through an I²C controlled source selector. The main audio processing is done by the Micronas MSP3415G version with built-in UltraBass-II algorithm.

A digital delay line is created using the I²S channel and SRAM. The delay created can be selected between two values, one for the Receiver box, and one for the Monitor.

The processed audio signals are then differentially transmitted to the audio amplifier panel. This amplifier drives a tweeter and a twin-drive woofer (low/mid range). Active filtering is done prior to the amplifiers.

9.1.4 Control

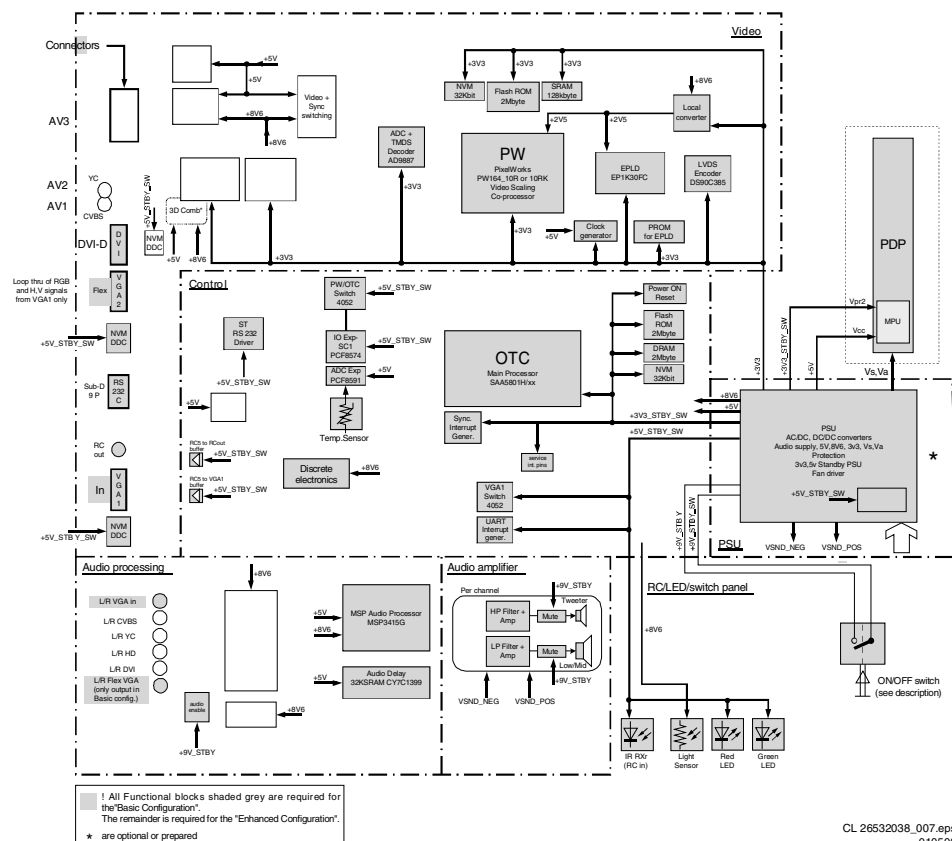
The main controller is the OTC, referred to as the "main processor". This operates in co-ordination with the processor in the Pixel Works Scaler (PW), referred to as the "co-processor".

When the FM242 monitor is connected to an F21R Receiver box, the UART commands from the Receiver box will control the monitor.

In stand-alone mode, the monitor can be controlled via the Remote Control or via the RS232C port.

DDC1/2B (Digital Data Channel, an I²C-based protocol) is implemented with separate identification NVMs for the two VGA inputs and the DVI-D input as well. In addition, the RS232C port can be used for software download to the PW and the OTC. The target for downloading is controlled via a switch in the RS232C path; the switch itself is controlled by the OTC.

9.1.5 Power Supply



CL 26532038_007.eps
010502

Figure 9-2 Power Supply Path

The PSU consists of a pre-conditioner part and a DC/DC converter part. This converter supplies power to the PDP high voltages, the auxiliary voltages, and the audio amplifier. There is a separate standby power supply, which supplies the Main Processor, PDP microcontroller, interrupt generator and some other circuits.

The mains inlet module will host the inlet and filtering.

There is a functional "Mains on/off" switch on the LED panel. This switch is on the secondary side, controlling the relays on the primary side.

9.2 Power Supply Unit (Diagrams P)

The Power Supply Unit (PSU) is designed to provide regulated output voltages for the plasma display panel (PDP) and the built-in electronic panels (such as e.g. the SCAVIO and Audio Amplifier panels).

It will house the Pre-conditioner, DC/DC converters and the Standby circuitry. In addition, this panel will house the protection and the (optional) fan drive circuitry.

For Service this supply-panel is a black-box. When defect (this can be traced via error-codes in the error buffer, or by strange phenomena), a new panel must be ordered, and after receipt, the defective panel must be send for repair.

In that case before sending it, check if the supply-output lines match with the values on the pdp-sticker.

9.3 VGA Connector Panel (Diagram VGA)

The Video Graphics Array (VGA) panel serves as an interface between the peripheral VGA equipment (Receiver box, PC, etc.) and the SCAVIO panel. Some specifications of this panel:

- Two NVMs are present, which hold identification data for the DDC line.
- Further, there are buffers present for the incoming and outgoing sync signals.
- RC_OUT cinch for linking with other equipment.
- Provision to terminate the incoming sync lines with $75\ \Omega$ via the EBOX_PRESENT line.

For a description, see the next **SCAVIO** chapter.

9.4 SCAVIO Panel (Diagrams SC)

The Scaler Control Audio Video Input Output (SCAVIO) panel contains:

- All the input connectors,
- Analogue and digital video processing,
- Scaler (co-processor)
- Interface to the PDP,
- Audio processing (excluding the audio amplifier),
- OTC (main processor), and
- RS232C in/out.

Note: There are two versions of this panel, a *Basic* and an *Enhanced* version. Therefore, a lot of components are therefore not mounted for the *Basic* version.

For the circuit description, we divide the board into the following parts:

1. Supply
2. Video processing
3. Audio processing
4. Control

9.4.1 Supply

See figure "Power Supply Part" in paragraph 9.1.5. (even opletten dat hij goed verwijst)

9.4.2 Video Processing (Diagrams SC3, 4, 5, 6, 10, 11 and 12)

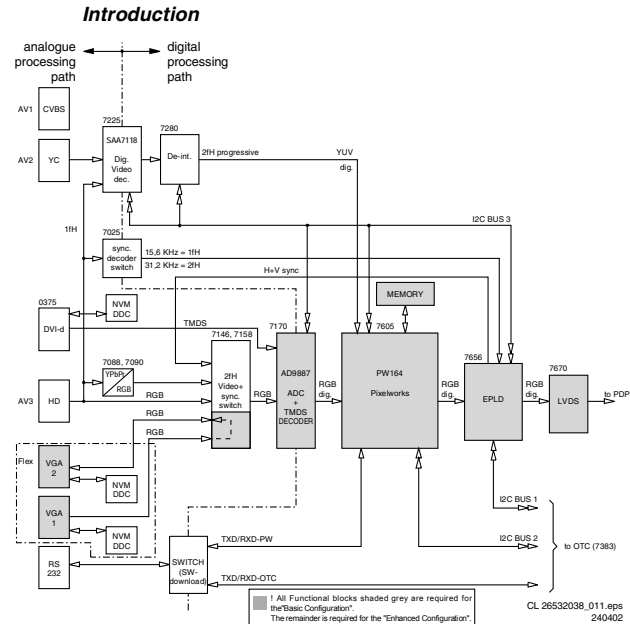


Figure 9-3 Video path

This mainly consists of a small **analogue** processing part and a larger **digital** signal processing part.

The video inputs like CVBS, YC, High Definition RGB, or YUV (1fH and 2fH), VGA, and DVI-D are received and processed. The YPbPr (2fH) is discretely converted to RGB, whereas the YCbCr (1fH) is processed in the SAA7118 Digital Video decoder. The base-band video inputs (CVBS and YC) are output from the digital video decoder as digital YUV, which are then further processed by the PixelWorks Scaler.

The VGA signals are first AD converted and then processed by the PW Scaler.

The digital input on the DVI is first decoded by the TMD5 decoder inside the AD9887 and then processed by the PW Scaler.

The PW Scaler output is going through an EPLD and then via the LVDS transmitter to the PDP (Plasma Display Panel) as differential serial data.

Analogue Video

This part describes the analogue video and synchronisation path of all inputs, until it reaches the "analogue digital converters" of either the AD9887 (ADC+TMD5 Decoder) or the SAA7118E (Digital Video Decoder).

Also the switching part is described and the necessary control signals.

In principle, all video control functions are done by the PixelWorks processor.

Note: This part also includes the VGA connector panel that is mounted on top of the SCAVIO panel.

Inputs

There are five video inputs, which are divided in three types:

- **VGA** (2fH): named VGA1 and VGA2. Both are 15-pole SUB-D connectors for RGB and HV, and are situated on the VGA connector panel. For automatic identification by a PC, each VGA input is foreseen with a DDC NVM IC. VGA2 is set default as loop through of VGA1. In the *Enhanced*

version, VGA2 can be switched as output, via the control signals VGA2_OUT and VGA2_EN.

- **YPbPr/RGB** (combined 2fH and 1fH): named AV3 and suitable for YCbCr/HD-YPbPr/HD-RGB + HV. These are cinch inputs. YPbPr and RGB are seen as separate inputs by the HW and must be properly selected by SW.
- **CVBS like** (1fH): named AV1 for CVBS and AV2 for Y/C. These are also cinch inputs.

Video Path

The 1fH signals (including YPbPr) are buffered (item 7113/21/17) and go directly to a digital video processor, the SAA7118E (item 7225 on diagram SC5), where they are converted into a digital signal.

The 2fH signals are also buffered; both YPbPr (item 7074/84/79) and RGB (item 7141/38/35) buffers get the same input signals.

When YPbPr signals are connected, the correct input must be selected, to get a picture with proper colours. Thus, the signals must pass a video matrix (item 7088/90, see diagram SC3), where they are converted into RGB. There are two matrices, an NTSC and an ATSC. With the MATRIX_SEL signal, the correct matrix is chosen (item 7089). The detection is done automatic, by an algorithm in the EPLD.

After the matrix, the signals enter a clamp/blanking circuit (7102/03/04 and 7100), for the removal of the residual sync signals. The control is done via the lines HD_BLANKN and HD_CLAMPN coming from the EPLD.

All RGB signals come together at 4-pole switches (item 7146/58), one for each colour, where they are switched to the AD converter item 7170 (R_ADC, G_ADC and B_ADC).

Sync Path

All incoming H and V sync signals go to a 4-pole switch (item 7009) where SYNC_SEL and VIDEO_SEL_2 determine, which signal is available on the ADC.

Before this switch, the VGA sync path is rather straight, only 1 switch (item 7007) is added for the VGA2 sync signals, which determines if VGA2 sync is input or output (VGA2_OUT). In the *Basic* configuration, these switches are omitted, and replaced by jumpers (4009/4010).

The external sync (AV1 - 3) signals are treated differently. Both H_HD_EXT and V_HD_EXT go to three circuits:

- A comparator circuitry with an LM319 (item 7025), to ensure both sync pulses are always positive going (H and V_SYNC_CMP),
- A level detection circuitry (items 7000 to 7002), to detect if the sync is of TTL level (H and V_SYNC_TTL),
- A positive/negative going detection circuitry (items 7006 to 7010), to indicate the polarity of the sync in case of TTL level (H and V_SYNC_POL_N).

All above-mentioned signals go to the EPLD (see also diagram SC11) for further processing.

Processed sync signals H_HD and V_HD coming from the EPLD, are also switched to the ADC (H_ADC and V_ADC) along with the proper RGB signals (R_ADC, G_ADC and B_ADC).

Digital Video

This part describes the digital video path on the SCAVIO panel, starting at the AD converters in either the AD9887 (item 7170) or in the SAA7118E (item 7225) and ending at the output for the PDP.

For both the *Basic* as the *Enhanced* version, everything "after" the PixelWorks chip, is equal.

For the *Basic* version, the input for the PixelWorks only consists of the "Graphics path".

For the *Enhanced* version, it is both the "Graphics path" as the "Video path".

The SCAVIO panel contains the following functions in the video path:

1. The "YPbPr to RGB matrix" and "2fH Video+Sync Switch" are explained above in the "Analogue Video" part.
2. The "Digital Video" path containing the Digital Video Decoder and the De-interlacer.
3. The "Digital Graphics" path containing the ADC+TMDS decoder.
4. The "Scaler" which is the PixelWorks (PW164-10R) plus Memory.
5. The "EPLD" for sync decoding and video manipulation.
6. The "LVDS" encoder.

The Digital "Graphics Path"

This is a straightforward application of the Analogue Devices AD9887 (item 7170). Inputs for this device are:

- FTV Receiver box,
- VGA formats (up to SXGA@75 Hz),
- 2fH RGB+HV (only in *Enhanced* version),
- 2fH YPbPr, which is converted to RGB by the "YUV to RGB" matrix (only in *Enhanced* version),
- DVI-d (only in *Enhanced* version).

Analogue input: The AD9887 is meant to sample "pixel synchronous". To achieve this, a (software) driver is running on the PixelWorks processor (PW). After hooking up a source to the AD9887, the PW starts counting the number of lines per field and calculates the H-period time. With these two values, it determines the exact match or the closest match out of a look-up-table (LUT) with VGA standards. When the correct standard is determined, the PW will set the AD9887 I²C registers to the correct value. The AD9887 should now sample with exact the same frequency as the incoming standard requires. This is done to get an optimal picture performance.

It also is a "must" when a computer graphics card is connected, because there is no, or very little, post anti-aliasing filtering done on such cards. Therefore, the outputted RGB samples need to be exactly aligned with the sampling of the AD converter.

Analogue input signals can go up to SXGA@75 Hz, which gives a pixel clock of 135 MHz. In fact, it can handle any standard with a pixel rate up to 140 MHz.

Special modes are made for the F21R E-box, for both PAL and NTSC. These are invoked when an E-box is connected to the SCAVIO panel.

Digital input: Via the DVI connector (*Enhanced* version only) it is possible to insert TMDS (Transition Minimised Differential Signalling) data into the SCAVIO panel. DVI is a fairly new computer graphics standard, which can be seen as the digital follow-up of the analogue VGA interface. The TMDS signal is directly fed into the AD9887, where any DVI standard up to SXGA@60 Hz can be decoded to RGBHV.

The preferred VGA standard for the FM242 is programmed in the DDC EEPROM (item 7215), which can be read by the PC. Via an internal switch, it is possible to choose between the analogue input and the digital input. The output format is for both inputs the same (8 bit RGB plus HV). The driver determines whether the AD9887 outputs single or dual pixels. For lower standards like VGA@60Hz, the interface will be single pixel, which means that every clock cycle one byte of R, G, and B data is outputted. Dual pixel means that on every clock cycle two bytes of R, G, and B data outputted. These two bytes are de-multiplexed, which is done to make the interface more robust for jitter, set-up, and hold times, and to reduce the digital data rate over the PCB (reduced EMC).

Digital "Video Path"

This path is only available in the *Enhanced* version of the SCAVIO panel and is used for the following input signals:

- CVBS input,
- Y/C input, and
- 1fH YPbPr.

It is a straightforward application of the Philips SAA7118 (item 7225) and the Micronas SDA9400 (item 7280). The SAA7118 is a PAL/NTSC/SECAM Digital Video Decoder with adaptive digital comb filter and component video input. It decodes all input standards to 4:2:2 YCbCr, which then is processed by the SDA9400.

The SDA9400 is a motion adaptive de-interlacer, which makes a progressive video signal from the interlaced input. Depending on the motion in the picture, it will just interleave the odd and even field (no motion: ABAB) or repeats the same field twice; this is also known as line doubling (motion: AABB). The motion detection is pixel based, with a soft-switch between "motion" and "no motion".

After the de-interlacer, the signal is fed as a 4:2:2 YCbCr progressive scan signal to the video port of the PixelWorks processor.

The PixelWorks PW164 Scaler

The PixelWorks PW164 Image Processor is a highly integrated (Ball Grid Array, BGA) chip, which interfaces video inputs and computer graphics in virtually any format to the PDP.

Computer images from VGA to UXGA resolution input to the chip can be resized to fit on the PDP. Horizontal and vertical image scalers, coupled with intelligent frame locking circuitry create sharp images, centred on the screen and without user intervention. An embedded DRAM frame buffer and memory controller perform the frame rate conversion.

Video data from 4:3 aspect ratio NTSC or PAL and 16:9 aspect ratio sources such as HDTV and DVD are supported. Non-linear scaling (only with Receiver Box) and separate horizontal and vertical scalers allow these inputs to be resized optimally for the native resolution of the PDP.

For more information, see <http://www.pixelworksinc.com/index.phtml>

Table 9-1 PixelWorks Scaler: Ports

Pin	Name	I/O	Remark
C2	PW_SCL	+3V3 output	to I2C devices, Video related
B1	PW_SDA	+3V3 output	to I2C devices, Video related
A1	PW_SDA_NVM	+3V3 output	to I2C device NVM
C4	PW_SCL_NVM	+3V3 output	to I2C device NVM
B3	SCL_2	+3V3 output	to I2C device OTC
A2	SDA_2	+3V3 output	to I2C device OTC
A3	VIDEO_SEL_1	+3V3 output	to video selection switches (see truth table)
C5	VIDEO_SEL_2	+3V3 output	to video selection switches (see truth table)
B4	VGA2_OUTN	+3V3 output	Selects VGA 2 as output. (Low => Output)
A4	VGA2_EN	+3V3 output	Enables VGA 2 (High = Enable)
C6	SYNC	Input	Is "high" if EPLD detects separate sync signals on YPbPr
B5	1_2FH	Input	Is "high" if sync on YPbPr is 1fH (from EPLD)

Table 9-2 PixelWorks Scaler: Video Select

VIDEO_SEL_1	VIDEO_SEL_2	Selected input for AD9887
0	0	RGB 2fh
0	1	YPbPr 2fh
1	0	VGA 1
1	1	VGA 2

Service remark: Desoldering/soldering of this BGA-ICs requires very specialised (BGA) equipment. This can only be done by the full-equipped service repair workshops. (See also chapter "Safety Instructions, warning and notes").

The EPLD

The main reason to add the EPLD, is the contrast reserve function. Other reasons:

- **Black and white ADC adjustment.** The EPLD provides a high-resolution measurement of the black and white level, to adjust the gain and offset of the ADC (AD9887). It is read via I²C.
- **LVDS reset.** This function resets the LVDS transmitter on the SCAVIO board, in case the LVDS transmitter starts up without a clock. This could cause an abnormal picture. Therefore, as soon as the clock is not fast enough (as during start-up) the EPLD will keep the LVDS transmitter in reset.
- **Receiver-box mode detection.** For loop through mode (a second FTV monitor connected to the output of the first monitor), a secondary detection is needed to check the presence of an Receiver or E-box.
- **ATSC sync detection/ decoding.** Core for proper sync decoding for ATSC sources.
- **Contrast reserve.** This function can increase the gain of the video signal to a factor of two. It will reduce the gain again if it sees too many overflows (code 255) in any of the R, G, or B channels. Adjustable via two parameters: user contrast and overflow limit. Parameters are I²C controlled.

The LVDS transmitter

This DS90C385MTD56 IC from National Semiconductors converts 28 bits of CMOS/TTL data into four LVDS (Low Voltage Differential Signalling) data streams. A PLL transmit clock is transmitted in parallel with the data streams over a fifth LVDS link. Every cycle of the clock, 28 bits of input data are sampled and transmitted. At a transmit clock frequency of 36 MHz, 24 bits of RGB data and 3 bits of display control data are transmitted per LVDS data channel. This IC operates at 3.3 V

For more information, see <http://www.national.com/>

Picture Mute

In some cases, it is necessary to mute the video output:

- In Monitor mode:
 - During switch "on/off" of the monitor,
 - During source change,
 - During video or sync loss, or
 - By a user action (A/V-mute or mute)
 - In audio only mode (when the ICONN-box is connected).
- In TV mode:
 - During switch "on/off" of the Monitor/Receiver box,
 - During source change in the Receiver box,
 - During video or sync loss, or
 - In audio only mode (Receiver box mutes the picture).

Most of the picture mute controls are done via the PixelWorks co-processor.

Anti Ageing

In order to prevent visible luminance differences, due to ageing of the monitor, a special algorithm is implemented. This algorithm is based on horizontal shifting of the picture in the

monitor. For good understanding some terms will now first be explained:

- **Ageing:** The effect that the efficiency of a plasma cell (pixel) decreases as a function of the total time that it is illuminated. This effect occurs mostly because of phosphor ageing. As a result, the cell brightness decreases over time. An alternative name for ageing is "burn-in".
- **Picture shifting:** Fixed structures, like logo's, OSDs, and subtitles, will cause burn-in effects. The only way to mask this to a certain extent, is picture shifting so that the "burn-in" effect is smeared out over a larger area, and makes it less visible.

Most of the anti-ageing controls are implemented in the PixelWorks co-processor.

Horizontal

Horizontal anti-ageing steps:

- **Step width/height,** the step width/height shall be 1 horizontal pixel width (approx. 1 mm).
- **Number of steps,** the maximum number of steps in horizontal direction shall be 9.
- **Time between steps,** the time between the steps shall be 5 minutes.

The effect of H anti-ageing is a horizontal movement (start at 0):

0 → 1 → 2 → 3 → 4
12 ← 11 ← 10 ← 9 ← 8 ← 7 ← 6 ← 5 ←
→ 13 → 14 → 15

With the following sequence:

0 → 1 → 2 → → 14 → 15 → 0 → 1 → etc.

After every step, the updated value is stored in NVM and gives an indication about the direction (0...4 and 13...15 to the right and 5...12 to the left).

The horizontal anti-ageing is a process, which is basically independent of any other processes that are running in SW. This means that this process should never be reset in order to get the best anti-ageing effect. Therefore, the horizontal shift positions and directions need to be stored in NVM, so that the anti-ageing process returns to its latest position after the set has been switched off or to standby. There is only one H and one V shift value for the anti-ageing process that is applicable for the AV1, AV2, and AV3 inputs.

Note: Horizontal shift cannot be done for sources that are screen filling and do not have sufficient overscan.

Vertical

V-shift is done in the F21R Receiver box when the TV mode is active, or in the *enhanced* configuration when the monitor mode is active.

Vertical anti-ageing steps:

- **Height/height,** the height/height shall be 1 display line (approximately 1 mm).
- **Number of steps,** the maximum number of steps in vertical direction shall be 9.
- **Time between steps,** the time between the steps shall be 80 minutes, which equals one complete horizontal ageing shift (16 steps x 5 minutes).

The effect of V anti-ageing is a vertical movement (start at 0):

4
↑ ↓
3 5
↑ ↓
2 6
↑ ↓
1 7
↑ ↓
0 8

↓
9 15
↓ ↑
10 14
↓ ↑
11 13
↓ ↑
12

With the following sequence:

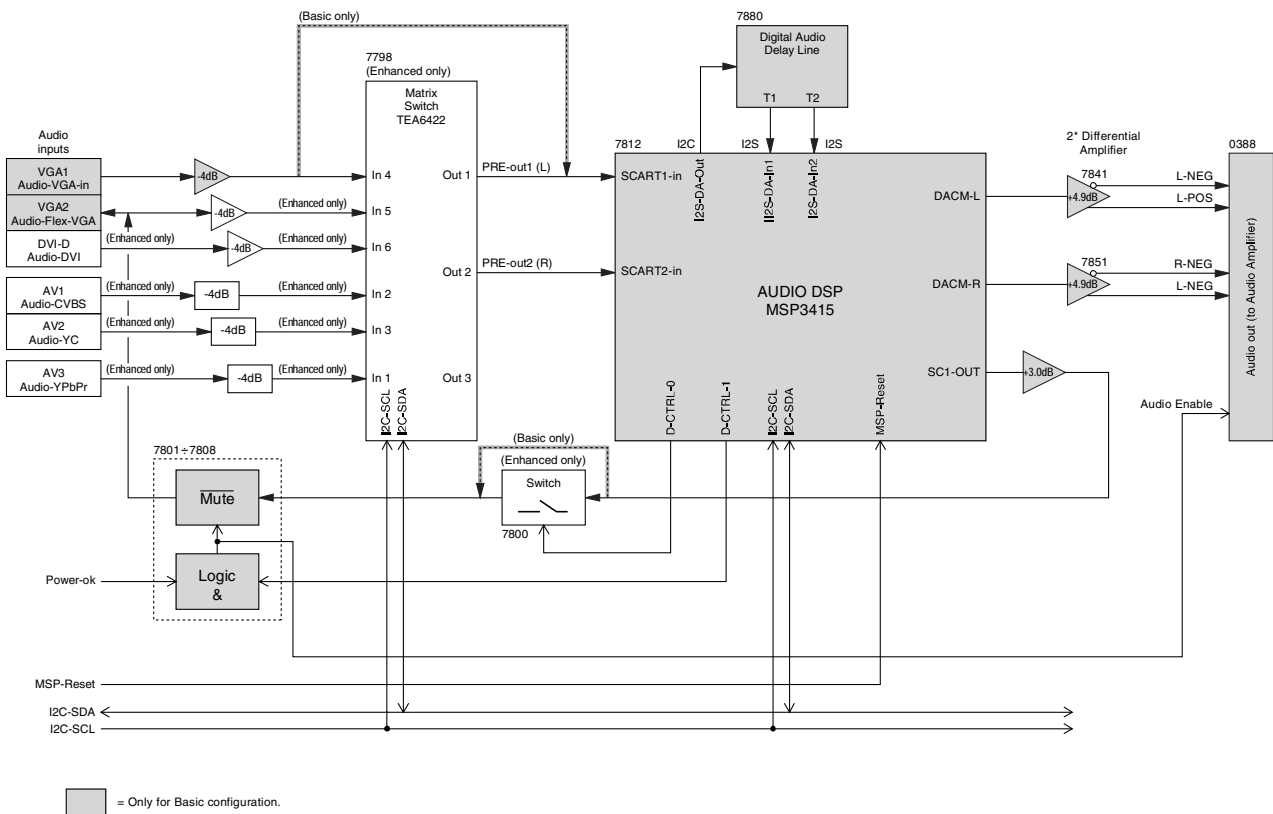
0 → 1 → 2 → → 14 → 15 → 0 → 1 → etc.

After every step, the vertical shift position and its direction are stored in NVM. So the anti-ageing process returns to its last position after the set has been switched off (or to standby). Also, if by any cause (i.e. VGA-source selection or when service/factory mode is active), the anti-ageing process is stopped; the vertical shift position should be restored after resuming the anti-ageing process.

9.4.3 Audio processing (Diagrams SC13, 14 and 15)

This chapter describes the audio processing on the SCAVIO board. The circuit enables to connect several audio sources, selects the source on the desired input, and performs audio processing and audio delay. It also matches the output signals for the Audio Amplifier panel.

The sound-related electronics for FM242 are very straight forward, and consists of a Micronas MSP3415G sound processor, an active high pass and low pass filter, and separate Class-D amplifiers for woofers and tweeters.



CL 26532038_012.eps
280302

Figure 9-4 Audio Path

The processing part consists mainly of the following components:

- **MSP3415G:** a DSP sound processor from Micronas. This component is able to do all kinds of digital signal processing like volume, bass/treble, UltraBass and balance. It has analogue inputs and outputs, as well as an I²S in/output used for digital audio delay.
- **RAM** with its logic to be able to store the I²S information for audio delay.
- **Anti-plop/ mute circuit:** which is necessary to prevent disturbances on the audio lines during start-up or switching.
- **TEA6422:** a matrix switch of ST. This component is able to switch six inputs to three different outputs (only used in the *Enhanced* version).

MSP3415G

Ultra Bass

Because of the closed box implementation in FM242, a common DBE solution will not give an optimal bass performance. A closed box needs a substantial boost over a wide frequency range, while DBE operates in a limited frequency region.

Adaptive Ultra Bass 2 (UB2) is a suitable alternative. This feature is based on the psycho-acoustic effect of the missing fundamental, and gives the impression of a deep bass while the loudspeakers do not reproduce these low frequencies. This feature is implemented in the MSP3415G.

Audio delay

To compensate for "lip sync error" (the difference in time between the aural and visual perceptions), two different audio delays are selectable via the customer's menu (one for the Receiver box and one for the Monitor).

This is done at the audio processor IC7812 via an I²S bus and an additional delay circuit (IC7880 - 7882).

One can select delays of 24 ms (I2S_DATA_IN1) and 40 ms (I2S_DATA_IN2), or no delay.

In case of a delay, the AUDIO_L/R_IN is re-routed as I2S_DATA_OUT to the audio delay circuit and, depending on the selected delay, returned as I2S_DATA_IN1 or I2S_DATA_IN2, resulting in AUDIO_L/R_OUT.

Anti-plop/Mute

In several cases, it is necessary to mute the sound output. This muting is handled by the MSP sound processor, or by the Receiver box in case of TV-mode.

- In Monitor mode:
 - During switch "on/off" of the monitor.
 - During source change.
 - During video or sync loss, or
 - By a user action (A/V-mode or mute).
- In TV mode:
 - During switch "on/off" of the Monitor/Receiver box.
 - During source change in the Receiver box.
 - During video or sync loss, or
 - By a user action (mute).

9.4.4 Control (Diagrams SC7, 8 and 9)

Introduction

As a main controller, better known as OTC (On screen display, Teletext and Control). It is a 8051 (XA) based controller from Philips Semiconductors, the SAA5801H.

Although the OTC is the main controller, it acts as a "slave" when communicating with the PixelWorks IC via the I²C-bus 2.

When the monitor is connected to an F21R Receiver box, the UART commands from the Receiver box will control the monitor.

In stand-alone mode, the monitor can be controlled via the Remote Control or via the RS232C port.

DDC1/2B (Display Data Channel, an I²C based protocol) is implemented with separate NVMs for the two VGA inputs and the DVI-D input as well.

It is also possible to use the RS232C port for software upload to the PW Scaler and the OTC. The target for downloading is controlled via a switch in the RS232C path; the switch itself is controlled by the OTC.

OTC Processor

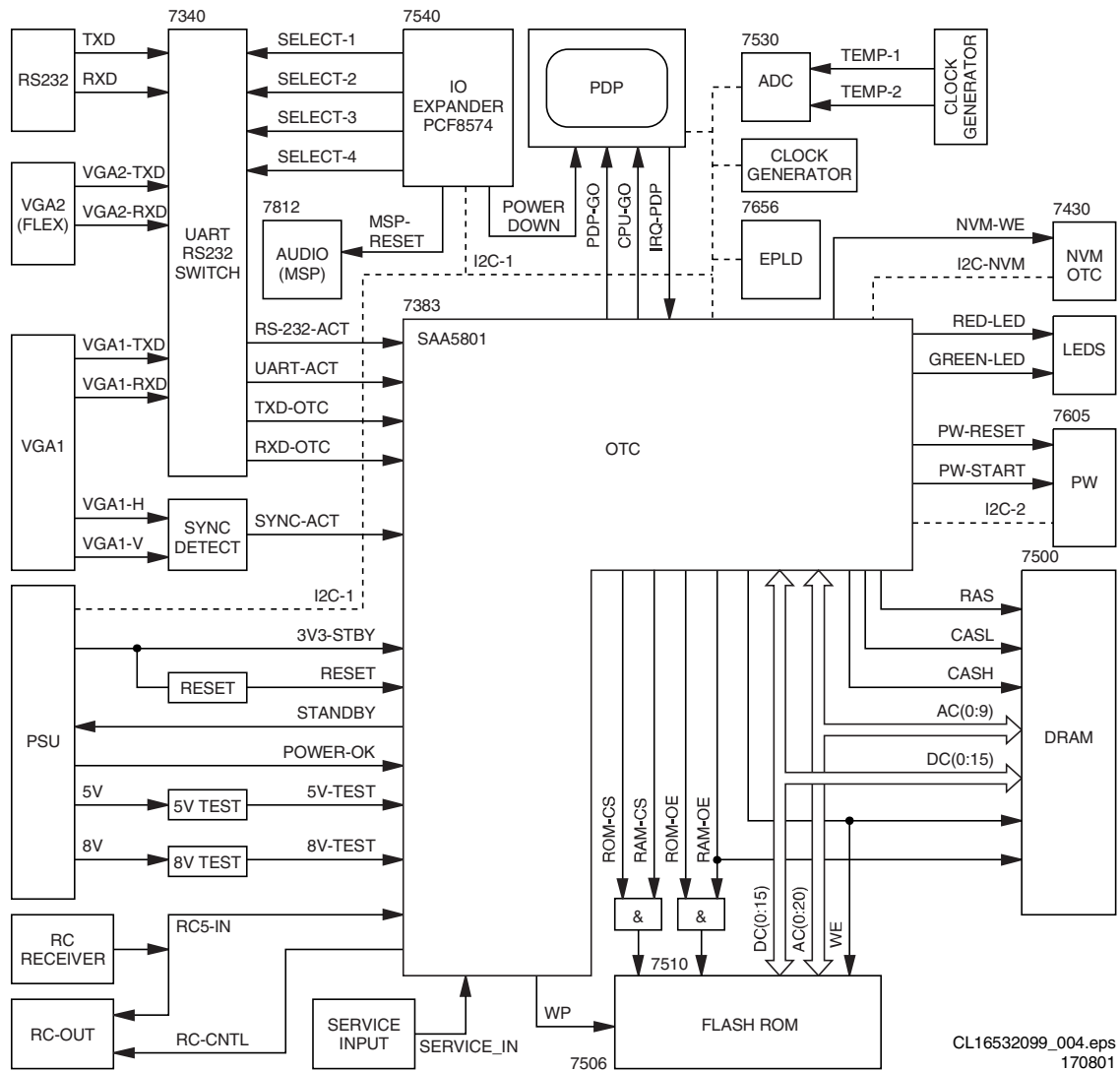


Figure 9-5 Control Part

This part describes the Main Control part of the SCAVIO panel and the interfaces with the software. The control function consists of the following tasks:

- Control of external IOs, like fan speed, temperature, service and RC5,
- UART communication with Receiver box,
- RS232 control / communication,
- Supports the uploading of new SW into the Flash-ROMs,
- Start-up of monitor and initialisation via I²C,
- Error detection and storing.

Start-up and Shut-down

The POR signal is not generated on the PSU, but on the SCAVIO board. This is done with a fully integrated ADM810T POR chip (item 7517), which senses the 3.3 V coming from the PSU. The sense level is 3.08 V. During power-up as well as power-down, this chip will make the RESET signal high. During

power-up, this signal will be held "high" until 240 ms after V_{CC} has become stable.

During power-down, the system will be reset as soon as the V_{CC} drops below 3.08 V.

Start-up from Standby

When the monitor is in standby mode, it can wake-up in several ways:

- When an RC command is received (RC_IN).
- Detection of H- and/or V-sync on VGA1.
- Detection of UART communication on VGA1.
- Detection of RS232 communication.
- Detection of Service modes.

RC Command Reception

When a RC command is received at the RC receiver on the LED panel, it will go directly to the RC input of the OTC (RC_IN

CL16532099_004.eps
170801

on pin 100). If the monitor is in standby, and a proper RC command is send, it will wake up.
The RC commands are routed to the Receiver box via the VGA1 connector pin 9 (RC_VGA1), but this loop through connection is controlled by RC_CNTL. Below is the truth table.

Table 9-3 RC Commands overview

F21REE-box	FM242Monitor	RC commands	RC_CNTL
In Standby	In Standby	Send to E-box	Low
In Standby	On	Blocked	High
On	In Standby	Send to E-box	Low
On	On	Send to E-box	Low

Note: All RC commands are direct available on a separate RC-out cinch connector (RC_OUT) on the VGA connector panel.

H- and/or V-sync Detection

When both H and or V sync are present on VGA1, there is a pulse (low) on SYNC_ACT. When only H is present, SYNC_ACT is continuously low. The SW disables the interrupt, once an interrupt is received.

UART Communication Detection

When there is UART communication on VGA1, the UART detection circuitry generates on every falling edge a pulse on UART_ACT. This is a negative going pulse with a width of ± 470 s. The first pulse will trigger the main software to check for the FTV System Protocol (FSP). The SW disables the interrupt, once an interrupt is received.

RS232 Communication Detection

When an RS232 connection is made, and communication is started (pulses on RS232_RXD), RS232_ACT becomes "high". Via a transistor, RS232_ACT will make SERVICE_IN low. When the Monitor is operating (+5 V available), this signal is made low (in fact it is disabled).

Service Mode Detection

It is possible to enter four different Service Modes (provided the OTC is still supplied by the +3V3_STBY).
Via the SERVICE_IN signal, which is an ADC input of the OTC, a voltage drop is detected from +3.3 V to V_X .
 V_X is a DC voltage, which represents the mode to be entered:

Table 9-4 Service Mode levels

Service mode	Limits V_X [V]	V_X [V]	Remarks
SDM	$3.0 > V_X > 2.4$	2.6	0382-2 to GND
SAM	$2.4 > V_X > 1.8$	2.0	0382-4 to GND
COMPAIR	$1.8 > V_X > 1.2$	1.4	0382-6 to GND
RS232 active	$V_X < 0.8$	>0.8	Plug in RS232, start program

I²C

There are four I²C busses used in the monitor (see also I²C overview in chapter 6):

- I²C bus 1** is a (5 V) device bus, controlled by the OTC, and connected to the following devices:
 - PDP.
 - EPLD.
 - IO expander SCAVIO - PCF8574A.
 - IO expander PSU - PCF8574A.
 - ADC - PCF8591.
 - Clock generator for PW - FS6377.
 - Sound processor MSP3415G.
 - Audio switch TEA6422 (*Enhanced* version only).
- I²C bus 2** is used for communication with the PixelWorks co-processor (PW). Although the OTC is the main

controller, it will act in this case as a "slave", since the PW can only act as a "master". Before any I²C commands are exchanged, the PW gets an interrupt (PW_START) to indicate that the OTC wants to talk to the PW.

- I²C bus 3** is a (5 V) device bus, controlled by the PW, and connected to the following devices:
 - Video Decoder SAA7118 (*Enhanced* version only).
 - De-interlacer SDA9400 (*Enhanced* version only).
 - ADC/TMDS receiver AD9887.
 - 3D Comb filter MN8783LSI (optional).
- I²C bus 4** is a (5 V) device bus, only connected to the NVM (to avoid data corruption).

Notes:

- The PDP and EPLD are in fact 3.3 V bus devices, but they need to be connected to bus 1, since the OTC is the first controller to be fully operating at start-up. For this reason, an I²C level shifter (items 7675/76 on diagram SC12) is included, which converts the 5 V signals into 3V3 and visa versa.
- One of the first commands is to set the clock generator (item7570), else the PW can not start-up.

RS232/UART

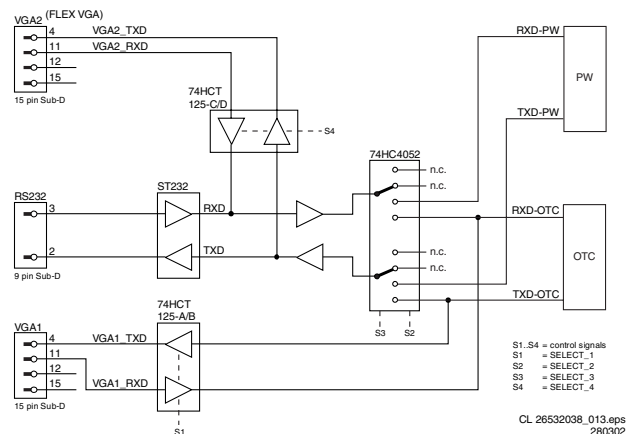


Figure 9-6 RS232/UART

Introduction

The FM242 monitor is equipped with an RS232 interface. Via a 9 pin Sub-D connector, it is possible to connect a PC for special modes like:

- SW download.
- Factory purposes.
- Service.
- Professional use.

A second option is the connection of a so-called ICONN-box for Institutional TV (Hotel TV).

For communication with the Receiver Box, UART is used, because this protocol can handle longer cable distances than I²C. The (Receiver box) UART is interfaced via a 15 pin Sub-D connector (VGA connector). Via this UART connection, the F21R Receiver box and the FM242 Monitor can communicate (via FSP). By doing so, the monitor will know that there is an Receiver box connected and thus it is operating as a TV configuration.

RS232/UART Control

The OTC (SELECT_1 to 4) controls the RS232/UART switches. When the monitor is in Receiver box mode, there is no RS232 communication possible. The monitor is default set in Receiver box mode (switch to n.c. position) and the UART from/to VGA1 is enabled, to allow communication with Receiver box.

If no Receiver box is detected, the UART is disabled to ensure that there will be no communication towards the OTC, and the

switch is set to OTC. Below the truth table of the switches is shown, which determine the TXD/RXD path.

Table 9-5 RS232/UART Control

S1 = SELECT_1 (P0)	S2 = SELECT_1 (P1)	S3 = SELECT_1 (P3) (3)	S4 = SELECT_4 (P4) (4)	UART VGA1 (E-box)	UART VGA2 (flex)	RS232 set to OTC (1)	RS232 set to PW (2)
0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	0
0	0	1	0	0	0	0	0
0	0	1	1	1	0	0	0
0	1	0	0	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	0	0	0	0	0
0	1	1	1	1	0	0	0
1	0	0	0	0	0	0	0
1	0	0	1	0	0	1	0
1	0	1	0	0	1	0	0
1	0	1	1	0	0	0	0
1	1	0	0	0	0	0	0
1	1	0	1	0	0	0	1
1	1	1	0	0	1	0	0
1	1	1	1	0	0	0	0

- (1) Software download or ComPair mode.
- (2) Software download or Debug mode.
- (3) When S3 = 1 the 74HCT4052 is in a tri-state ("off" state).
- (4) When S4 = 0 the TXD out of RS232 is disabled (S4 may not become low in any other case).

UART Detection

When the VGA1_RXD line is continuously "low", the OTC might run slow due the fact that so-called "break" signals are generated. To prevent this, a small circuitry is added to detect whether VGA1_RXD is continuously "low" (item 7310). When the VGA1_RXD line is "low" for about 20 ms, the buffer-switch (item 7303-A) is opened. After this buffer, a second discrete buffer is placed (items 7315/16), which keeps the RXD_OTC line "high" and changes the 5 V into a 3.3 V level.

ICONN-box

For application of a Flat TV in a hotel environment, the monitor is designed to operate with a so-called ICONN-Box. The ICONN-box will take over the user control of the monitor, by intercepting the RC5-commands coming from a dedicated RC-transmitter, which sends specific hotel-mode commands and sending its own RC-commands to the microprocessor in the monitor.

So in the ICONN-Box, the hotel-mode commands will be converted to RC5-commands, which then can be interpreted by the monitor.

When connected to the RS232 input, this box takes over the control of the IR-receiver in the monitor. It is also able to control the front LED. The switches (7550 for the IR and 7555 for the LED signals) are controlled by the ICONN_NOT signal.

The ICONN-Box shall interface the Monitor with the following signals:

- **IR-RX.** These are the RC5-commands coming from the specific hotel RC5 - transmitter, which are received via the RC5-receiver of the monitor.
- **IR-TX.** These are the RC5-commands generated by the ICONN-Box and send to the monitor.

- **RL_ICN.** Control signal from the microprocessor (of the monitor), indicating the power state of the monitor. The ICONN-Box and monitor LED are driven in parallel.
- **GL_ICN.** Control signal from the microprocessor (of the monitor), indicating the functionality of the monitor, to drive the LED on the ICONN-Box.
- **LD_ICN.** Control signal from the ICONN-Box to drive the green LED on the monitor.

9.5 Audio Amplifier Panel (Diagram A)

9.5.1 Introduction

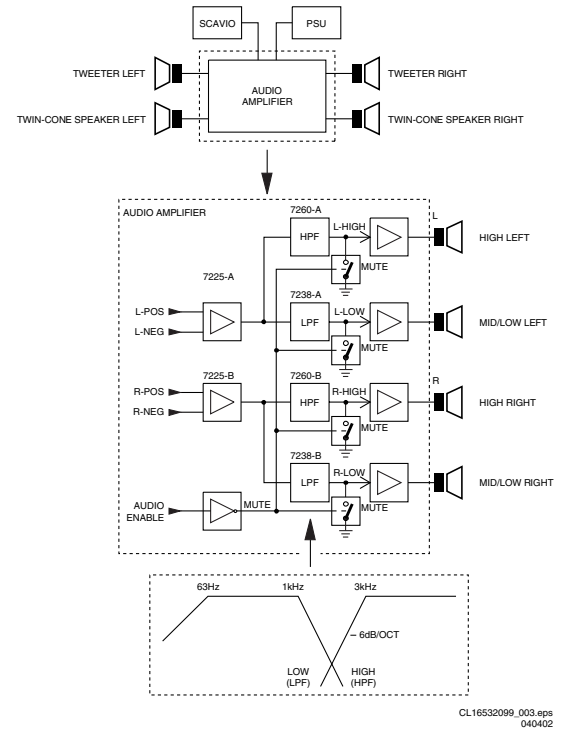


Figure 9-7 Block diagram Audio Amplifier

This panel houses the audio filters and amplifiers necessary for driving the speakers. The differential audio inputs (for common mode immunity) come from the SCAVIO panel (via connector 0388).

The PSU delivers the positive and negative supply voltage of 14.5 V_{DC}, as well as the +9V_STBY voltage.

After being filtered and amplified, the signals go to the speaker section, where the (twin cone) low/mid range speakers and the tweeters are driven (load impedance is 8 Ω).

9.5.2 Supply (Diagram A7)

The supply voltage is a symmetrical voltage of +/- 14.5 V_{DC}, generated by the main supply via L5002.

- V_{SND_POS} (+14.5 V_{DC}) on connector 0302 pin 5/6, and
- V_{SND_NEG} (-14.5 V_{DC}) on connector 0302 pin 1/2.

9.5.3 Filter (Diagram A2)

Electrical filtering is needed for following reasons:

- Limiting the cone excursion, thereby reducing the distortion.
- Increasing the power handling capacity (PHC).

In the FM242, active second order Sallen-Key filters are used, with crossover frequencies of 1 kHz for the lowpass filter, and 3 kHz for the highpass filter.

The audio signals are filtered **before** the amplifier. There are some reasons for doing this:

- It is now easy to do active filtering, and
- At less costs (no expensive coils and capacitors).

Low Pass Filter (LPF)

For L and R separately, a Low Pass Filter (IC7238A and B) is processing L_LOW and R_LOW.

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

High Pass Filter (HPF)

For L and R separately, a High Pass Filter (IC7260A and B) is processing L_HIGH and R_HIGH.

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

9.5.4 Amplifier (Diagrams A3 to A6)

Each speaker has its own 15 W class-D amplifier. These amplifiers combine a good performance with a high efficiency, resulting in a big reduction in heat generation.

Principle

Audio-power-amplifier systems have traditionally used linear amplifiers, which are well known for being inefficient. In fact, a linear Class AB amplifier is designed to act as a variable resistor network between the power supply and the load. The transistors operate in their linear region, and the voltage that is dropped across the transistors (in their role as variable resistors) is lost as heat, particularly in the output transistors. Class D amplifiers were developed as a way to increase the efficiency of audio-power-amplifier systems.

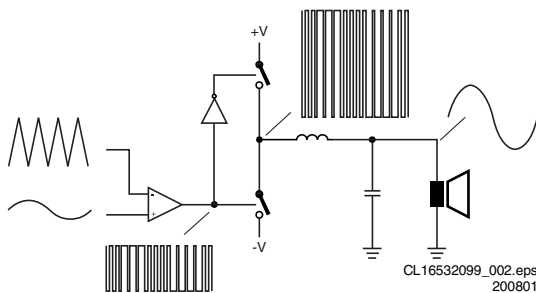


Figure 9-8 Principle Class-D Amplifier

The Class D amplifier works by varying the duty cycle of a Pulse Width Modulated (PWM) signal.

By comparing the input voltage to a triangle wave, the amplifier increases duty cycle to increase output voltage, and decreases duty cycle to decrease output voltage.

The output transistors (item 7365 on diagram A3) of a Class D amplifier switch from "full off" to "full on" (saturated) and then back again, spending very little time in the linear region in between. Therefore, very little power is lost to heat. If the transistors have a low "on" resistance ($R_{DS(ON)}$), little voltage is dropped across them, further reducing losses.

A Low Pass Filter at the output passes only the average of the output wave, which is an amplified version of the input signal. In order to keep the distortion low, negative feedback is applied (via R3308). A second feedback loop (via R3310) is tapped after the output filter, in order to decrease the distortion at high frequencies.

The **advantage** of Class D is increased efficiency (= less heat dissipation). Class D amplifiers can drive the same output power as a Class AB amplifier using less supply current. The **disadvantage** is the large output filter that drives up cost and size. The main reason for this filter is that the switching waveform results in maximum current flow. This causes more

loss in the load, which causes lower efficiency. An LC filter with a cut-off frequency less than the Class D switching frequency (350 kHz), allows the switching current to flow through the filter instead of the load. The filter is less lossy than the speaker, which causes less power dissipated at high output power and increases efficiency in most cases.

9.5.5 Mute (Diagram A2 to A6)

A mute switch (item 7302) is provided at the PWM inputs (item 7315, LM311). This switch is controlled by the AUDIO_ENABLE line, which checks the availability of the +9V_STBY voltage.

9.5.6 Protections

Short-circuit Protection (Diagram A3)

A protection is made against a too high temperature of transistor 7355 in case of a short-circuit of output FET 7365-1. Transistor 7340 is sensing the current through transistor 7355 via R3355, and activates the DC-protection line (see below) in case the current becomes too high. This is the same for all four amplifier parts.

DC-protection (Diagram A7)

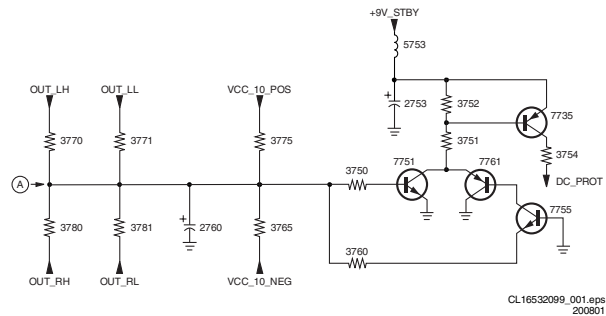


Figure 9-9 DC Protection

Because of the symmetrical supply, a DC-blocking capacitor, between the amplifier and the speaker, is not necessary. However, it is still necessary to protect the speaker for DC voltages.

The following protections are therefore implemented:

- Via R3765 and R3775, each stabilised supply voltage line (via items 7735 and 7745) is checked on deviations.
- Via R3770/3771/3780/3781, each amplifier output is checked for DC-voltage.

Via R3765/3775, a virtual earth is imposed on point A. When one of the supply voltages deviates, a DC voltage will occur on this point. If point A is positive, T7751 will conduct. If it is negative, T7761 will conduct.

Both cases will make T7735 conduct, so that the DC-PROT signal will be made high. This ensures that the power supply is rapidly trimmed back.

Capacitor C2760 will ensure that only DC-signals at point A will activate the protection.

9.6 LED/Switch Panel (Diagram LD)

This panel contains:

- The red and green status LEDs,
- The RC input receiver,
- The light sensor, and
- The "on/off" switch.

All signals on this panel come directly from the SCAVIO panel:

- The LED and sensor signals (RED_LED, GREEN_LED and LIGHT_SEN_IN) are routed to the OTC. When a F21R Receiver box is connected, the sensor signal is routed to

the OTC of this box (via UART), where it will control the HOP via I²C.

- The RC signal (RC_IN) is routed to the OTC, the VGA1 connector, and the RC-out cinch connector.
- The signals to (+9V_STBY) and from (+9V_STBY_SW) the "on"/"off" switch are routed to the PSU board.

9.7 Plasma Display Panel (PDP)

9.7.1 General

The PDP, which is used in the FM242, is a product of SDI (Samsung Display Industry) . When defect, a new panel must be ordered, and after receipt, the defective panel must be send for repair in the packing (flight case) of the new ordered panel.

9.7.2 Operation

Principle

Plasma displays work by applying a voltage between two transparent display electrodes on the front glass plate of the display. The electrodes are separated by an MgO dielectric layer and surrounded by a mixture of neon and xenon gases. When the voltage reaches the "firing level", a plasma discharge occurs on the surface of the dielectric, resulting in the emission of ultra violet light.

This UV light then excites the phosphor material at the back of the cell and emits visible light. Each cell or sub-pixel has red, blue or green phosphor material and three sub-pixels combine to make up a pixel. The intensity of each colour is controlled by varying the number and width of voltage pulses applied to the sub-pixel during a picture frame. This is implemented by dividing each picture frame into sub-frames.(for 50 Hz-mode there are 12 sub frames, for the 60 Hz-mode there are 10 sub frames). During a sub-frame, all cells are first addressed - those to be lit are pre-charged to a specific address voltage - then during the display time the display voltage is applied to the entire screen lighting those that were addressed.

Each sub-frame has a weighting-factor. (Time-entity depends on size and number of pixels on the screen). This is a purely digital PWM control mechanism, which is a key advantage as it eliminates any unnecessary digital to analogue conversions.

9.8 Abbreviation list

ADC	Analogue to Digital Converter
AM	Amplitude Modulation
AP	Asia Pacific
AV	External Audio Video
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BGA	Ball Grid Array
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
ComPair	Computer aided rePair
CVBS	Composite Video Blanking and Synchronisation
DAC	Digital to Analogue Converter
DDC	Display Data Channel (a protocol based on I2C)
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DTS	Digital Theatre Sound
DVD	Digital Versatile Disc
DVI-d	Digital Visual Interface, d = digital only
EEPROM	Electrically Erasable and Programmable Read Only Memory
EMI	Electro Magnetic Interference
EPLD	Erasable Programmable Logic Device
EU	Europe
EXT	External (source), entering the set via SCART or Cinch
FLASH	Flash memory
FM	Frequency Modulation
FSP	FTV System Protocol
FTV	Flat TeleVision
HP	Headphone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I2C	Integrated IC bus
I2S	Integrated IC Sound bus
ICONN	Institutional CONNector
IF	Intermediate Frequency
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.
IR	Infra Red
IRQ	Interrupt Request
LATAM	Latin America
LED	Light Emitting Diode
L/L"	Monochrome TV system. Sound carrier distance is 6.5 MHz. L" is Band I, L is all bands except for Band I
LS	Loudspeaker
LVDS	Low Voltage Differential Signalling
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
MPEG	Motion Pictures Experts Group
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
NTC	Negative Temperature Coefficient, non-linear resistor

NTSC	National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)	VCR	Video Cassette Recorder
		Va	Addressing voltage for the plasma display
		Vra	Setting voltage for Va
		Vrs	Setting voltage for Vs
		Vs	Sustain voltage for the plasma display
		Y/C	Luminance (Y) and Chrominance (C) signal
NVM	Non Volatile Memory: IC containing TV related data e.g. alignments	YUV	Component video
OC	Open Circuit	0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16:9 format, 12 = play 4:3 format
OSD	On Screen Display		
OTC	On screen display, Teletext and Control		
P50	Project 50 or Easy Link		
PAL	Phase Alternating Line. Colour system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)		
PCB	Printed Circuit Board		
PCM	Pulse Code Modulation		
PDP	Plasma Display Panel		
PFC	Power Factor Corrector (or Pre-conditioner)		
PIP	Picture In Picture		
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency		
POR	Power On Reset, signal to reset the P		
Progressive Scan	Scan mode, where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.		
PTC	Positive Temperature Coefficient, non linear resistor		
PW	Pixel Works (manufacturer) video scaling co-processor		
PWM	Pulse Width Modulation		
RAM	Random Access Memory		
RC	Remote Control handset		
RC5	Remote Control system 5, signal from the remote control receiver		
RGB	Red Green Blue		
ROM	Read Only Memory		
SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs		
SCAVIO	Scaler Control Audio Video Input and Output		
SCL	Serial Clock I2C		
SDA	Serial Data I2C		
SDI	Samsung Display Industry		
SDRAM	Synchronous DRAM		
SECAM	SEquence Couleur Avec Memoire. Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz		
SMPS	Switched Mode Power Supply		
SOG	Sync On Green		
SOPS	Self Oscillating Power Supply		
S/PDIF	Sony Philips Digital InterFace		
SRAM	Static RAM		
STBY	Standby		
SVHS	Super Video Home System		
SW	Software		
SXGA	1280x1024		
THD	Total Harmonic Distortion		
TMDs	Transition Minimised Differential Signalling		
TXT	Teletext		
UART	Universal Asynchronous Receiver Transmitter, 2-wire bus which can handle longer cables than I2C.		
P	Microprocessor		

10. Spare Parts List

Audio Panel [A]					
Various					
0302	2422 025 16846	Connector 9P m h	2419	4822 124 23002	10µF 20% 16V
0303	2422 025 16702	Connector 5P m h	2430	2238 586 59812	100nF 20-80% 50V 0603
0304	2422 025 16543	Connector 4P m	2430	4822 126 14305	100nF 10% 16V 0603
0388	2422 025 16704	Connector 8P m	2434	2020 012 93764	220µF 20% 35V
1730	4822 071 52502	Fuse 2.5A	2435	2238 586 59812	100nF 20-80% 50V 0603
1740	4822 071 52502	Fuse 2.5A	2435	4822 126 14305	100nF 10% 16V 0603
			2440	5322 126 11583	10nF 10% 50V 0603
			2455	2238 586 59812	100nF 20-80% 50V 0603
			2455	4822 126 14305	100nF 10% 16V 0603
			2459	2238 586 59812	100nF 20-80% 50V 0603
			2459	4822 126 14305	100nF 10% 16V 0603
			2460	2020 012 93764	220µF 20% 35V
			2465	2020 552 96326	220nF 10% 16V
			2466	2020 552 96326	220nF 10% 16V
			2509	4822 126 14247	1.5nF 50V 0603
			2510	4822 126 14226	82pF 5% 50V 0603
			2515	4822 124 12084	1µF 20% 50V
			2515	4822 124 23002	10µF 20% 16V
			2516	2238 586 59812	100nF 20-80% 50V 0603
			2516	4822 126 14305	100nF 10% 16V 0603
			2518	2238 586 59812	100nF 20-80% 50V 0603
			2518	4822 126 14305	100nF 10% 16V 0603
			2519	4822 124 12084	1µF 20% 50V
			2519	4822 124 23002	10µF 20% 16V
			2530	2238 586 59812	100nF 20-80% 50V 0603
			2530	4822 126 14305	100nF 10% 16V 0603
			2534	2020 012 93764	220µF 20% 35V
			2535	2238 586 59812	100nF 20-80% 50V 0603
			2535	4822 126 14305	100nF 10% 16V 0603
			2540	5322 126 11583	10nF 10% 50V 0603
			2555	2238 586 59812	100nF 20-80% 50V 0603
			2555	4822 126 14305	100nF 10% 16V 0603
			2559	2238 586 59812	100nF 20-80% 50V 0603
			2559	4822 126 14305	100nF 10% 16V 0603
			2560	2020 012 93764	220µF 20% 35V
			2565	2020 552 96326	220nF 10% 16V
			2566	2020 552 96326	220nF 10% 16V
			2609	4822 126 14247	1.5nF 50V 0603
			2610	4822 126 14226	82pF 5% 50V 0603
			2615	4822 124 12084	1µF 20% 50V
			2615	4822 124 23002	10µF 20% 16V
			2616	2238 586 59812	100nF 20-80% 50V 0603
			2616	4822 126 14305	100nF 10% 16V 0603
			2618	2238 586 59812	100nF 20-80% 50V 0603
			2618	4822 126 14305	100nF 10% 16V 0603
			2619	4822 124 12084	1µF 20% 50V
			2619	4822 124 23002	10µF 20% 16V
			2630	2238 586 59812	100nF 20-80% 50V 0603
			2630	4822 126 14305	100nF 10% 16V 0603
			2634	2020 012 93764	220µF 20% 35V
			2635	2238 586 59812	100nF 20-80% 50V 0603
			2635	4822 126 14305	100nF 10% 16V 0603
			2640	5322 126 11583	10nF 10% 50V 0603
			2655	2238 586 59812	100nF 20-80% 50V 0603
			2655	4822 126 14305	100nF 10% 16V 0603
			2659	2238 586 59812	100nF 20-80% 50V 0603
			2659	4822 126 14305	100nF 10% 16V 0603
			2660	2020 012 93764	220µF 20% 35V
			2665	2020 552 96326	220nF 10% 16V
			2666	2020 552 96326	220nF 10% 16V
			2730	2020 012 93764	220µF 20% 35V
			2732	2020 012 93764	220µF 20% 35V
			2734	4822 124 12084	1µF 20% 50V
			2734	4822 124 23002	10µF 20% 16V
			2740	2020 012 93764	220µF 20% 35V
			2742	2020 012 93764	220µF 20% 35V
			2744	4822 124 12084	1µF 20% 50V
			2744	4822 124 23002	10µF 20% 16V
			2752	4822 124 23002	10µF 20% 16V
			2753	4822 124 23002	10µF 20% 16V
			2759	5322 126 11578	1nF 10% 50V 0603
			2760	5322 124 41945	22µF 20% 35V
			2770	5322 126 11578	1nF 10% 50V 0603
			2771	5322 126 11578	1nF 10% 50V 0603
			2780	5322 126 11578	1nF 10% 50V 0603
			2781	5322 126 11578	1nF 10% 50V 0603
			2799	5322 126 11583	10nF 10% 50V 0603
			3201	4822 051 30221	220Ω 5% 0.062W
			3202	4822 051 30102	1kΩ 5% 0.062W
			3203	4822 051 30272	2.7kΩ 5% 0.062W
			3205	4822 051 30221	220Ω 5% 0.062W
			3206	4822 051 30102	1kΩ 5% 0.062W
			3207	4822 051 30272	2.7kΩ 5% 0.062W
			3210	4822 051 30333	33kΩ 5% 0.062W
			3211	4822 117 13632	100kΩ 1% 0603 0.62W
			3215	4822 051 30221	220Ω 5% 0.062W
			3216	4822 051 30102	1kΩ 5% 0.062W
			3217	4822 051 30272	2.7kΩ 5% 0.062W
			3220	4822 051 30221	220Ω 5% 0.062W
			3221	4822 051 30102	1kΩ 5% 0.062W
			3222	4822 051 30272	2.7kΩ 5% 0.062W
			3230	4822 051 30101	100Ω 5% 0.062W
			3231	4822 051 30103	10kΩ 5% 0.062W
			3231	4822 051 30222	2.2kΩ 5% 0.062W
			3232	4822 051 30152	1.5kΩ 5% 0.062W
			3232	4822 051 30682	6.8kΩ 5% 0.062W
			3233	4822 051 30103	10kΩ 5% 0.062W
			3233	4822 051 30222	2.2kΩ 5% 0.062W
			3234	4822 051 30272	2.7kΩ 5% 0.062W
			3234	4822 051 30561	560Ω 5% 0.062W
			3240	4822 051 30101	100Ω 5% 0.062W
			3241	4822 051 30103	10kΩ 5% 0.062W
			3241	4822 051 30222	2.2kΩ 5% 0.062W
			3242	4822 051 30152	1.5kΩ 5% 0.062W
			3242	4822 051 30682	6.8kΩ 5% 0.062W
			3243	4822 051 30103	10kΩ 5% 0.062W
			3243	4822 051 30222	2.2kΩ 5% 0.062W
			3244	4822 051 30272	2.7kΩ 5% 0.062W
			3244	4822 051 30561	560Ω 5% 0.062W
			3255	4822 051 30562	5.6kΩ 5% 0.063W 0603
			3255	4822 117 11817	1.2kΩ 1% 0.062W
			3256	4822 051 30153	15kΩ 5% 0.062W
			3256	4822 051 30332	33kΩ 5% 0.062W
			3257	4822 051 30222	2.2kΩ 5% 0.062W
			3257	4822 051 30471	470Ω 5% 0.062W
			3259	4822 117 12917	1Ω 5% 0.062W 0603
			3270	4822 051 30562	5.6kΩ 5% 0.063W 0603
			3270	4822 117 11817	1.2kΩ 1% 0.062W
			3271	4822 051 30153	15kΩ 5% 0.062W
			3271	4822 051 30332	33kΩ 5% 0.062W
			3272	4822 051 30222	2.2kΩ 5% 0.062W
			3272	4822 051 30471	470Ω 5% 0.062W
			3274	4822 117 12917	1Ω 5% 0.062W 0603
			3301	4822 051 30102	1kΩ 5% 0.062W
			3301	4822 117 12902	8.2kΩ 1% 0.063W 0603
			3302	4822 051 30103	10kΩ 5% 0.062W
			3302	4822 051 30472	4.7kΩ 5% 0.062W
			3303	4822 051 30102	1kΩ 5% 0.062W
			3304	4822 051 30472	4.7kΩ 5% 0.062W
			3306	4822 117 12902	8.2kΩ 1% 0.063W 0603
			3306	4822 117 12903	1.8kΩ 1% 0.063W 0603
			3307	4822 117 13632	100kΩ 1% 0603 0.62W
			3308	4822 117 13632	100kΩ 1% 0603 0.62W
			3309	4822 051 30181	180Ω 5% 0.062W
			3310	4822 117 12864	82kΩ 5% 0.6W
			3311	4822 051 30682	6.8kΩ 5% 0.062W
			3311	4822 117 12917	1Ω 5% 0.062W 0603
			3315	5322 117 11726	10Ω 5%
			3318	5322 117 11726	10Ω 5%
			3325	4822 117 11449	2.2kΩ 5% 0.1W 0805
			3327	4822 117 11449	2.2kΩ 5% 0.1W 0805
			3328	4822 051 30102	1kΩ 5% 0.062W
			3330	5322 117 11726	10Ω 5%
			3336	4822 051 30475	4.7MΩ 5% 0.062W 0603
			3337	5322 117 11726	10Ω 5%
			3340	4822 051 30103	10kΩ 5% 0.062W
			3355	5322 117 11726	10Ω 5%
			3361	4822 051 30475	4.7MΩ 5% 0.062W 0603
			3362	5322 117 11726	10Ω 5%
			3401	4822 051 30102	1kΩ 5% 0.062W
			3401	4822 117 12902	8.2kΩ 1% 0.063W 0603
			3402	4822 051 30103	10kΩ 5% 0.062W
			3402	4822 051 30472	4.7kΩ 5% 0.062W
			3403	4822 051 30102	1kΩ 5% 0.062W
			3404	4822 051 30472	4.7kΩ 5% 0.062W
			3406	4822 117 12902	8.2kΩ 1% 0.063W 0603
			3406	4822 117 12903	1.8kΩ 1% 0.063W 0603
			3407	4822 117 13632	100kΩ 1% 0603 0.62W
			3408	4822 117 13632	100kΩ 1% 0603 0.62W
			3409	4822 051 30181	180Ω 5% 0.062W
			3410	4822 117 12864	82kΩ 5% 0.6W
			3411	4822 051 30153	15kΩ 5% 0.062W
			3415	5322 117 11726	10Ω 5%
			3418	5322 117 11726	10Ω 5%
			3425	4822 117 11449	2.2kΩ 5% 0.1W 0805
			3427	4822 117 11449	2.2kΩ 5% 0.1W 0805
			3428	4822 051 30102	1kΩ 5% 0.062W
			3430	5322 117 11726	10Ω 5%
			3436	4822 051 30475	4.7MΩ 5% 0.062W 0603
			3437	5322 117 11726	10Ω 5%
			3440	4822 051 30103	10kΩ 5% 0.062W
			3455	5322 117 11726	10Ω 5%
			3461	4822 051 30475	4.7MΩ 5% 0.062W 0603
			3462	5322 117 11726	10Ω 5%
			3501	4822 051 30102	1kΩ 5% 0.062W

3501	4822 117 12902	8.2kΩ 1% 0.063W 0603
3502	4822 051 30103	10kΩ 5% 0.062W
3502	4822 051 30472	4.7kΩ 5% 0.062W
3503	4822 051 30102	1kΩ 5% 0.062W
3504	4822 051 30472	4.7kΩ 5% 0.062W
3506	4822 117 12902	8.2kΩ 1% 0.063W 0603
3506	4822 117 12903	1.8kΩ 1% 0.063W 0603
3507	4822 117 13632	100kΩ 1% 0603 0.62W
3508	4822 117 13632	100kΩ 1% 0603 0.62W
3509	4822 051 30181	180Ω 5% 0.062W
3510	4822 117 12864	82kΩ 5% 0.6W
3511	4822 051 30682	6.8kΩ 5% 0.062W
3515	5322 117 11726	10Ω 5%
3518	5322 117 11726	10Ω 5%
3525	4822 117 11449	2.2kΩ 5% 0.1W 0805
3527	4822 117 11449	2.2kΩ 5% 0.1W 0805
3528	4822 051 30102	1kΩ 5% 0.062W
3530	5322 117 11726	10Ω 5%
3536	4822 051 30475	4.7MΩ 5% 0.062W 0603
3537	5322 117 11726	10Ω 5%
3540	4822 051 30103	10kΩ 5% 0.062W
3555	5322 117 11726	10Ω 5%
3561	4822 051 30475	4.7MΩ 5% 0.062W 0603
3562	5322 117 11726	10Ω 5%
3601	4822 051 30102	1kΩ 5% 0.062W
3601	4822 117 12902	8.2kΩ 1% 0.063W 0603
3602	4822 051 30103	10kΩ 5% 0.062W
3602	4822 051 30472	4.7kΩ 5% 0.062W
3603	4822 051 30102	1kΩ 5% 0.062W
3604	4822 051 30472	4.7kΩ 5% 0.062W
3606	4822 117 12902	8.2kΩ 1% 0.063W 0603
3606	4822 117 12903	1.8kΩ 1% 0.063W 0603
3607	4822 117 13632	100kΩ 1% 0603 0.62W
3608	4822 117 13632	100kΩ 1% 0603 0.62W
3609	4822 051 30181	180Ω 5% 0.062W
3610	4822 117 12864	82kΩ 5% 0.6W
3611	4822 051 30153	15kΩ 5% 0.062W
3611	4822 051 30223	22kΩ 5% 0.062W
3615	5322 117 11726	10Ω 5%
3618	5322 117 11726	10Ω 5%
3625	4822 117 11449	2.2kΩ 5% 0.1W 0805
3627	4822 117 11449	2.2kΩ 5% 0.1W 0805
3628	4822 051 30102	1kΩ 5% 0.062W
3630	5322 117 11726	10Ω 5%
3636	4822 051 30475	4.7MΩ 5% 0.062W 0603
3637	5322 117 11726	10Ω 5%
3640	4822 051 30103	10kΩ 5% 0.062W
3655	5322 117 11726	10Ω 5%
3661	4822 051 30475	4.7MΩ 5% 0.062W 0603
3662	5322 117 11726	10Ω 5%
3732	4822 051 30272	2.7kΩ 5% 0.062W
3733	4822 051 30102	1kΩ 5% 0.062W
3742	4822 051 30272	2.7kΩ 5% 0.062W
3743	4822 051 30102	1kΩ 5% 0.062W
3749	4822 051 30103	10kΩ 5% 0.062W
3750	4822 051 30471	470Ω 5% 0.062W
3751	4822 117 12925	47kΩ 1% 0.063W 0603
3752	4822 117 12925	47kΩ 1% 0.063W 0603
3754	4822 051 30102	1kΩ 5% 0.062W
3755	4822 117 13632	100kΩ 1% 0603 0.62W
3760	4822 051 30471	470Ω 5% 0.062W
3765	4822 117 13632	100kΩ 1% 0603 0.62W
3770	4822 117 13632	100kΩ 1% 0603 0.62W
3771	4822 117 13632	100kΩ 1% 0603 0.62W
3780	4822 117 13632	100kΩ 1% 0603 0.62W
3781	4822 117 13632	100kΩ 1% 0603 0.62W

5335	4822 157 11717	BLM31P500SPT
5360	4822 157 11717	BLM31P500SPT
5365	2422 536 00338	33μH 10% SMD 10mm
5435	4822 157 11717	BLM31P500SPT
5460	4822 157 11717	BLM31P500SPT
5465	2422 536 00338	33μH 10% SMD 10mm
5535	4822 157 11717	BLM31P500SPT
5560	4822 157 11717	BLM31P500SPT
5565	2422 536 00338	33μH 10% SMD 10mm
5635	4822 157 11717	BLM31P500SPT
5660	4822 157 11717	BLM31P500SPT
5665	2422 536 00338	33μH 10% SMD 10mm
5714	4822 157 11717	BLM31P500SPT
5719	4822 157 11717	BLM31P500SPT
5725	4822 157 11717	BLM31P500SPT
5753	2422 549 43769	Bead 30Ω at 100MHz

6328	4822 130 11397	BAS316
6334	4822 130 11148	UDZ4.7B
6335	4822 130 11148	UDZ4.7B
6355	4822 130 11148	UDZ4.7B

6356	4822 130 11148	UDZ4.7B
6359	4822 130 11148	UDZ4.7B
6360	4822 130 11148	UDZ4.7B
6428	4822 130 11397	BAS316
6434	4822 130 11148	UDZ4.7B
6435	4822 130 11148	UDZ4.7B
6455	4822 130 11148	UDZ4.7B
6456	4822 130 11148	UDZ4.7B
6459	4822 130 11148	UDZ4.7B
6460	4822 130 11148	UDZ4.7B
6528	4822 130 11397	BAS316
6534	4822 130 11148	UDZ4.7B
6535	4822 130 11148	UDZ4.7B
6555	4822 130 11148	UDZ4.7B
6556	4822 130 11148	UDZ4.7B
6559	4822 130 11148	UDZ4.7B
6560	4822 130 11148	UDZ4.7B
6628	4822 130 11397	BAS316
6634	4822 130 11148	UDZ4.7B
6635	4822 130 11148	UDZ4.7B
6655	4822 130 11148	UDZ4.7B
6656	4822 130 11148	UDZ4.7B
6659	4822 130 11148	UDZ4.7B
6660	4822 130 11148	UDZ4.7B
6732	4822 130 11551	UDZS10B
6742	4822 130 11551	UDZS10B
6750	4822 130 10328	BAV99W
6760	4822 130 10328	BAV99W

7211	3198 010 42320	BC857BW
7211	5322 130 42756	BC857C
7225	4822 209 30095	LM833D
7238	4822 209 30095	LM833D
7260	4822 209 30095	LM833D
7302	3198 010 42310	BC847BW
7303	3198 010 42310	BC847BW
7315	9338 028 20668	LM311D
7330	4822 130 42804	BC817-25
7340	3198 010 42310	BC847BW
7355	5322 130 60845	BC807-25
7365	9322 161 86668	IRF7343
7402	3198 010 42310	BC847BW
7403	3198 010 42310	BC847BW
7415	9338 028 20668	LM311D
7430	4822 130 42804	BC817-25
7440	3198 010 42310	BC847BW
7455	5322 130 60845	BC807-25
7465	9322 161 86668	IRF7343
7502	3198 010 42310	BC847BW
7503	3198 010 42310	BC847BW
7515	9338 028 20668	LM311D
7530	4822 130 42804	BC817-25
7540	3198 010 42310	BC847BW
7555	5322 130 60845	BC807-25
7565	9322 161 86668	IRF7343
7602	3198 010 42310	BC847BW
7603	3198 010 42310	BC847BW
7615	9338 028 20668	LM311D
7630	4822 130 42804	BC817-25
7640	3198 010 42310	BC847BW
7655	5322 130 60845	BC807-25
7665	9322 161 86668	IRF7343
7735	4822 130 60142	BC869
7736	3198 010 42310	BC847BW
7745	5322 130 61569	BC868
7746	3198 010 42320	BC857BW
7746	5322 130 42756	BC857C
7751	3198 010 42310	BC847BW
7753	3198 010 42320	BC857BW
7753	5322 130 42756	BC857C
7755	3198 010 42310	BC847BW
7761	3198 010 42320	BC857BW
7761	5322 130 42756	BC857C

LED/Switch Panel [LD]		
Various		
0040	3122 128 14292	Mains knob FM24 SL
0040	3122 128 14901	Mains knop FM23
0044	3122 124 36081	Day light filter
0317	2422 025 13369	Socket 6P (Telephone)
0320	2422 025 16545	Connector 10P m
1101	2422 128 02927	Switch push 2P
1101	4822 276 13483	Switch push 2P 25V h
1320	2422 025 16545	Connector 10P m
8320	3122 358 76521	Cable L20-S20 FM24

2107	4822 124 12095	100μF 20% 16V
2120	2020 024 90166	10μF 20% 35V
2126	2020 552 96326	220nF 10% 16V

3101	4822 051 30151	150Ω 5% 0.062W
3102	4822 117 13632	100kΩ 1% 0603 0.62W
3103	4822 051 30102	1kΩ 5% 0.062W
3103	4822 051 30221	220Ω 5% 0.062W
3104	4822 117 13632	100kΩ 1% 0603 0.62W
3105	4822 051 30102	1kΩ 5% 0.062W
3105	4822 051 30331	330Ω 5% 0.062W
3106	4822 051 30151	150Ω 5% 0.062W
3107	4822 051 30471	470Ω 5% 0.062W
3108	4822 051 30103	10kΩ 5% 0.062W
3109	4822 051 30101	100Ω 5% 0.062W
3120	4822 051 30472	4.7kΩ 5% 0.062W
3121	4822 051 30472	4.7kΩ 5% 0.062W
3122	4822 051 30102	1kΩ 5% 0.062W
3123	4822 051 30103	10kΩ 5% 0.062W
3124	4822 051 30102	1kΩ 5% 0.062W
3125	4822 051 30332	3.3kΩ 5% 0.062W
3126	4822 051 30474	470kΩ 5% 0.062W
3127	4822 051 30474	470kΩ 5% 0.062W
4101	4822 051 30008	Jumper 0603
4107	4822 051 30008	Jumper 0603

5100	2422 549 43769	Bead 30Ω at 100MHz
------	----------------	--------------------

6101	4822 130 11564	UDZ3.9B
6103	4822 130 83915	TLMV3100
6105	4822 130 11564	UDZ3.9B
6127	9322 140 63685	TEMD5000

7103	3198 010 42320	BC857BW
7103	5322 130 42756	BC857C
7103	9340 218 50115	BC857BW
7105	3198 010 42320	BC857BW
7105	5322 130 42756	BC857C
7105	9340 218 50115	BC857BW
7107	9322 155 82667	TSOP2236
7107	9322 155 98667	TSOP2236YA1
7107	9322 178 03667	TSOP2136YA1
7120	5322 209 82941	LM358D

SCAVIO Panel [SC]		
Various		
0020	3122 128 14831	Connector Plate
0252	3122 121 67261	Earth sheet
0301	2422 025 17396	Connector 20P m
0305	2422 025 16705	Connector 12P m
0318	2422 025 17233	Connector 32P f
0319	2422 025 17047	Connector 13p m
0320	2422 015 19565	D-lock 12.7mm
0320	2422 025 16545	Connector 10P m
0375	2422 033 00464	Socket DVI 24P f h
0376	2422 025 16768	Connector 9P f
0377	2422 026 05319	Socket 6P f
		YeBuWhGnBIRd
0378	2422 026 05071	Socket 4P f Wh/Rd
0378	2422 026 05273	Socket 6P f Wh/Rd
0379	2422 026 05274	Socket 6P 1xGnYe 2x/WhRd
0380	2422 026 05275	Socket cinch 6P 1xBuBl 2xWhRd
0381	4822 267 10994	Socket SVHS
0382	2422 025 17274	Connector 10P m
0385	2422 025 17274	Connector 10P m
0388	2422 025 16704	Connector 8P m
0600	3122 357 00421	Software (check Prod.Surv.)
0600	3122 357 00422	Software (Check Prod. Serv.)
0603	3122 357 00285	Software (check Prod.Surv.)
0603	3122 357 00287	Software (Check Prod. Serv.)

0603	3122 357 00404	Software (check Prod.Surv.)	2151	3198 016 31020	1nF 10% 25V 0603	2311	2238 586 59812	100nF 20-80% 50V 0603
0603	3122 357 00406	Software (Check Prod. Serv.)	2152	3198 017 34730	47nF 16V 0603	2318	5322 124 41945	22µF 20% 35V
0603	3122 357 00407	Software (check Prod. surv.)	2153	5322 124 41945	22µF 20% 35V	2328	5322 124 41945	22µF 20% 35V
0607	3122 357 00371	Software (check Prod.Surv.)	2156	5322 124 41945	22µF 20% 35V	2337	2020 552 94427	100pF 5% 50V 0603
1032▲	3122 357 21643	VGA Connector panel	2157	2238 586 59812	100nF 20-80% 50V 0603	2340	2238 586 59812	100nF 20-80% 50V 0603
1061	3122 358 76342	Mains inlet unit	2158	3198 017 34730	47nF 16V 0603	2351	2238 586 59812	100nF 20-80% 50V 0603
1063▲	3122 357 22202	SCAVIO Panel	2159	5322 124 41945	22µF 20% 35V	2352	2238 586 59812	100nF 20-80% 50V 0603
1100▲	2422 086 11009	Fuse T1.A 63V 2410	2160	2238 586 59812	100nF 20-80% 50V 0603	2353	4822 124 23002	10µF 20% 16V
1105▲	2422 086 11064	Fuse F0.5A 32V 1206	2161	2238 586 59812	100nF 20-80% 50V 0603	2354	2238 586 59812	100nF 20-80% 50V 0603
1105▲	2422 086 11092	Fuse F0.5A 50V 1206	2162	2238 586 59812	100nF 20-80% 50V 0603	2355	2238 586 59812	100nF 20-80% 50V 0603
1170▲	2422 086 11064	Fuse F0.5A 32V 1206	2164	4822 124 12095	100µF 20% 16V	2356	2238 586 59812	100nF 20-80% 50V 0603
1170▲	2422 086 11092	Fuse F0.5A 50V 1206	2165	2238 586 59812	100nF 20-80% 50V 0603	2365	2238 586 59812	100nF 20-80% 50V 0603
1171▲	2422 086 11013	Fuse F0.315A 32V 1206	2166	2238 586 59812	100nF 20-80% 50V 0603	2370	2238 586 59812	100nF 20-80% 50V 0603
1270▲	2422 086 11092	Fuse F0.5A 50V 1206	2167	4822 124 12095	100µF 20% 16V	2372	2238 586 59812	100nF 20-80% 50V 0603
1415	2422 543 89022	Xtal 6MHz 20pF CX5F	2168	4822 124 23002	10µF 20% 16V	2375	2238 586 59812	100nF 20-80% 50V 0603
1570	2422 543 01115	Crystal 24.576MHz	2170	2238 586 59812	100nF 20-80% 50V 0603	2381	2238 586 59812	100nF 20-80% 50V 0603
1575▲	2422 086 11064	Fuse F0.5A 32V 1206	2171	2238 586 59812	100nF 20-80% 50V 0603	2382	2238 586 59812	100nF 20-80% 50V 0603
1575▲	2422 086 11092	Fuse F0.5A 50V 1206	2172	2238 586 59812	100nF 20-80% 50V 0603	2383	2238 586 59812	100nF 20-80% 50V 0603
1670▲	2422 086 10964	Fuse T0.630A 63V	2173	2238 586 59812	100nF 20-80% 50V 0603	2415	2238 867 75339	33pF 5% 50V 0603
8305	3104 311 05181	Cable 12P/315/12P	2174	2238 586 59812	100nF 20-80% 50V 0603	2416	4822 126 11669	27pF 5% 50V 0603
8305	3122 358 76871	Tree assy S05-P05	2175	2238 586 59812	100nF 20-80% 50V 0603	2418	3198 016 31020	1nF 10% 25V 0603
8318	3122 358 76621	Foil S18-V18	2176	2238 586 59812	100nF 20-80% 50V 0603	2419	3198 016 31020	1nF 10% 25V 0603
8319	3104 311 04231	Cable 13P/120/13P	2177	2238 586 59812	100nF 20-80% 50V 0603	2420	2238 586 59812	100nF 20-80% 50V 0603
8391	3122 358 76331	Tree assy M91-CP91	2178	2238 586 59812	100nF 20-80% 50V 0603	2432	2238 586 59812	100nF 20-80% 50V 0603
— —			2179	2238 586 59812	100nF 20-80% 50V 0603	2433	2238 586 59812	100nF 20-80% 50V 0603
2000	2238 586 59812	100nF 20-80% 50V 0603	2180	2238 586 59812	100nF 20-80% 50V 0603	2434	2238 586 59812	100nF 20-80% 50V 0603
2001	2238 586 59812	100nF 20-80% 50V 0603	2181	2238 586 59812	100nF 20-80% 50V 0603	2435	2238 586 59812	100nF 20-80% 50V 0603
2002	4822 126 14491	2.2µF -20+80% 10V 0805	2182	2238 586 59812	100nF 20-80% 50V 0603	2436	2238 586 59812	100nF 20-80% 50V 0603
2003	2238 586 59812	100nF 20-80% 50V 0603	2183	2238 586 59812	100nF 20-80% 50V 0603	2437	4822 126 59812	100nF 20-80% 50V 0603
2004	4822 126 14491	2.2µF -20+80% 10V 0805	2184	2238 586 59812	100nF 20-80% 50V 0603	2438	4822 126 13879	220nF 20% 16V
2005	4822 126 14491	2.2µF -20+80% 10V 0805	2185	2238 586 59812	100nF 20-80% 50V 0603	2439	4822 126 13879	220nF 20% 16V
2007	2238 586 59812	100nF 20-80% 50V 0603	2186	2238 586 59812	100nF 20-80% 50V 0603	2446	2238 586 59812	100nF 20-80% 50V 0603
2008	4822 126 11785	47pF 5% 50V 0603	2187	2238 586 59812	100nF 20-80% 50V 0603	2447	2238 586 59812	100nF 20-80% 50V 0603
2009	2238 586 59812	100nF 20-80% 50V 0603	2188	2238 586 59812	100nF 20-80% 50V 0603	2448	2238 586 59812	100nF 20-80% 50V 0603
2012	2238 586 59812	100nF 20-80% 50V 0603	2189	2238 586 59812	100nF 20-80% 50V 0603	2499	2238 586 59812	100nF 20-80% 50V 0603
2014	5322 126 11583	10nF 10% 50V 0603	2190	2238 586 59812	100nF 20-80% 50V 0603	2500	2238 586 59812	100nF 20-80% 50V 0603
2015	4822 126 11785	47pF 5% 50V 0603	2191	2238 586 59812	100nF 20-80% 50V 0603	2501	4822 126 14226	82pF 5% 50V 0603
2020	2238 586 59812	100nF 20-80% 50V 0603	2192	2238 586 59812	100nF 20-80% 50V 0603	2502	4822 126 14226	82pF 5% 50V 0603
2021	3198 017 44740	470nF 10V 0603	2193	2238 586 59812	100nF 20-80% 50V 0603	2503	4822 126 14226	82pF 5% 50V 0603
2022	2238 586 59812	100nF 20-80% 50V 0603	2195	4822 124 23002	10µF 20% 16V	2504	4822 126 14226	82pF 5% 50V 0603
2030	3198 017 44740	470nF 10V 0603	2196	4822 124 23002	10µF 20% 16V	2505	4822 126 14226	82pF 5% 50V 0603
2034	5322 126 11583	10nF 10% 50V 0603	2197	4822 124 23002	10µF 20% 16V	2506	2238 586 59812	100nF 20-80% 50V 0603
2040	2238 586 59812	100nF 20-80% 50V 0603	2198	4822 124 23002	10µF 20% 16V	2511	2238 586 59812	100nF 20-80% 50V 0603
2041	2238 586 59812	100nF 20-80% 50V 0603	2199	4822 124 23002	10µF 20% 16V	2513	2238 586 59812	100nF 20-80% 50V 0603
2042	2238 586 59812	100nF 20-80% 50V 0603	2205	2238 586 59812	100nF 20-80% 50V 0603	2515	2238 586 59812	100nF 20-80% 50V 0603
2042	4822 126 13879	220nF 20% 16V	2206	2238 586 59812	100nF 20-80% 50V 0603	2520	4822 124 23002	10µF 20% 16V
2060	2238 586 59812	100nF 20-80% 50V 0603	2207	2238 586 59812	100nF 20-80% 50V 0603	2521	4822 124 23002	10µF 20% 16V
2061	2238 586 59812	100nF 20-80% 50V 0603	2208	4822 126 14127	39nF 10% 50V 0805	2522	4822 124 23002	10µF 20% 16V
2066	2238 586 59812	100nF 20-80% 50V 0603	2210	5322 126 11581	3.9nF 10% 63V 0603	2523	4822 124 23002	10µF 20% 16V
2072	5322 124 41945	22µF 20% 35V	2212	2238 586 59812	100nF 20-80% 50V 0603	2524	4822 124 23002	10µF 20% 16V
2077	5322 124 41945	22µF 20% 35V	2217	2238 586 59812	100nF 20-80% 50V 0603	2530	5322 124 41945	22µF 20% 35V
2082	5322 124 41945	22µF 20% 35V	2220	4822 124 23002	10µF 20% 16V	2531	2238 586 59812	100nF 20-80% 50V 0603
2088	2238 586 59812	100nF 20-80% 50V 0603	2221	4822 124 23002	10µF 20% 16V	2533	2238 586 59812	100nF 20-80% 50V 0603
2089	2238 586 59812	100nF 20-80% 50V 0603	2222	4822 124 23002	10µF 20% 16V	2534	2238 586 59812	100nF 20-80% 50V 0603
2090	2238 586 59812	100nF 20-80% 50V 0603	2223	4822 124 23002	10µF 20% 16V	2535	2238 586 59812	100nF 20-80% 50V 0603
2097	3198 016 31080	1pF 25% 50V 0603	2224	4822 124 23002	10µF 20% 16V	2537	2238 586 59812	100nF 20-80% 50V 0603
2103	3198 016 31080	1pF 25% 50V 0603	2228	4822 124 23002	10µF 20% 16V	2538	3198 016 31020	1nF 10% 25V 0603
2105	2238 586 59812	100nF 20-80% 50V 0603	2230	2238 586 59812	100nF 20-80% 50V 0603	2541	2238 586 59812	100nF 20-80% 50V 0603
2106	4822 126 14491	2.2µF -20+80% 10V 0805	2231	2238 586 59812	100nF 20-80% 50V 0603	2546	3198 016 31020	1nF 10% 25V 0603
2107	2238 586 59812	100nF 20-80% 50V 0603	2232	2238 586 59812	100nF 20-80% 50V 0603	2547	3198 016 31020	1nF 10% 25V 0603
2108	2238 586 59812	100nF 20-80% 50V 0603	2240	2238 586 59812	100nF 20-80% 50V 0603	2548	3198 016 31020	1nF 10% 25V 0603
2109	3198 017 44740	470nF 10V 0603	2247	2238 586 59812	100nF 20-80% 50V 0603	2550	3198 016 31020	1nF 10% 25V 0603
2110	3198 017 44740	470nF 10V 0603	2248	2238 586 59812	100nF 20-80% 50V 0603	2551	3198 016 31020	1nF 10% 25V 0603
2111	3198 017 44740	470nF 10V 0603	2249	2238 586 59812	100nF 20-80% 50V 0603	2552	3198 016 31020	1nF 10% 25V 0603
2112	5322 124 41945	22µF 20% 35V	2250	2238 586 59812	100nF 20-80% 50V 0603	2553	3198 016 31020	1nF 10% 25V 0603
2113	2238 586 59812	100nF 20-80% 50V 0603	2260	3198 017 34730	47nF 16V 0603	2554	2238 586 59812	100nF 20-80% 50V 0603
2114	3198 016 31080	1pF 25% 50V 0603	2261	3198 017 34730	47nF 16V 0603	2555	2238 586 59812	100nF 20-80% 50V 0603
2115	3198 017 34730	47nF 16V 0603	2262	3198 017 34730	47nF 16V 0603	2557	3198 016 31020	1nF 10% 25V 0603
2116	5322 124 41945	22µF 20% 35V	2263	3198 017 34730	47nF 16V 0603	2558	3198 016 31020	1nF 10% 25V 0603
2117	2238 586 59812	100nF 20-80% 50V 0603	2264	3198 017 34730	47nF 16V 0603	2559	3198 016 31020	1nF 10% 25V 0603
2118	3198 017 34730	47nF 16V 0603	2265	3198 017 34730	47nF 16V 0603	2560	3198 016 31020	1nF 10% 25V 0603
2119	3198 017 34730	47nF 16V 0603	2266	3198 017 34730	47nF 16V 0603	2562	3198 016 31020	1nF 10% 25V 0603
2120	5322 124 41945	22µF 20% 35V	2267	3198 017 34730	47nF 16V 0603	2563	3198 016 31020	1nF 10% 25V 0603
2123	3198 017 34730	47nF 16V 0603	2268	3198 017 34730	47nF 16V 0603	2564	3198 016 31020	1nF 10% 25V 0603
2124	3198 016 31080	1pF 25% 50V 0603	2269	3198 017 34730	47nF 16V 0603	2565	3198 016 31020	1nF 10% 25V 0603
2127	3198 016 31080	1pF 25% 50V 0603	2270	3198 017 34730	47nF 16V 0603	2566	3198 016 31020	1nF 10% 25V 0603
2128	3198 016 31080	1pF 25% 50V 0603	2274	3198 017 34730	47nF 16V 0603	2570	3198 016 31020	1nF 10% 25V 0603
2134	5322 124 41945	22µF 20% 35V	2275	3198 017 34730	47nF 16V 0603	2572	2238 586 59812	100nF 20-80% 50V 0603
2137	5322 124 41945	22µF 20% 35V	2276	3198 017 34730				

2611	2238 586 59812	100nF 20-80% 50V 0603	2801	2238 586 59812	100nF 20-80% 50V 0603	3040	4822 051 30332	3.3kΩ 5% 0.062W
2612	2238 586 59812	100nF 20-80% 50V 0603	2802	4822 124 23002	10μF 20% 16V	3041	4822 051 30222	2.2kΩ 5% 0.062W
2613	2238 586 59812	100nF 20-80% 50V 0603	2803	4822 124 23002	10μF 20% 16V	3042	4822 117 12891	220kΩ 1% 0.063W 0603
2614	2238 586 59812	100nF 20-80% 50V 0603	2804	3198 016 31020	1nF 10% 25V 0603	3043	4822 051 30222	2.2kΩ 5% 0.062W
2615	2238 586 59812	100nF 20-80% 50V 0603	2810	4822 124 12095	100μF 20% 16V	3044	4822 051 30332	3.3kΩ 5% 0.062W
2616	2238 586 59812	100nF 20-80% 50V 0603	2811	3198 016 31020	1nF 10% 25V 0603	3045	4822 051 30684	680kΩ 5% 0.062W
2617	2238 586 59812	100nF 20-80% 50V 0603	2812	3198 016 31020	1nF 10% 25V 0603	3050	4822 051 30102	1kΩ 5% 0.062W
2618	2238 586 59812	100nF 20-80% 50V 0603	2813	3198 016 31020	1nF 10% 25V 0603	3050	4822 051 30332	3.3kΩ 5% 0.062W
2619	2238 586 59812	100nF 20-80% 50V 0603	2814	4822 126 14585	100nF 10% 50V	3051	4822 051 30102	1kΩ 5% 0.062W
2620	2238 586 59812	100nF 20-80% 50V 0603	2815	3198 016 31020	1nF 10% 25V 0603	3052	4822 051 30102	1kΩ 5% 0.062W
2621	2238 586 59812	100nF 20-80% 50V 0603	2816	4822 124 23002	10μF 20% 16V	3053	4822 051 30102	1kΩ 5% 0.062W
2622	2238 586 59812	100nF 20-80% 50V 0603	2817	2238 586 59812	100nF 20-80% 50V 0603	3054	4822 051 30222	2.2kΩ 5% 0.062W
2623	2238 586 59812	100nF 20-80% 50V 0603	2818	3198 016 31020	1nF 10% 25V 0603	3060	4822 051 30103	10kΩ 5% 0.062W
2624	2238 586 59812	100nF 20-80% 50V 0603	2819	3198 016 31020	1nF 10% 25V 0603	3061	4822 051 30472	4.7kΩ 5% 0.062W
2625	2238 586 59812	100nF 20-80% 50V 0603	2820	4822 124 23002	10μF 20% 16V	3065	4822 051 30103	10kΩ 5% 0.062W
2628	2238 586 59812	100nF 20-80% 50V 0603	2821	4822 124 23002	10μF 20% 16V	3066	4822 051 30102	1kΩ 5% 0.062W
2629	4822 122 33741	10pF 10% 50V	2822	4822 126 14247	1.5nF 50V 0603	3071	4822 051 30759	75Ω 5% 0.062W
2630	2238 586 59812	100nF 20-80% 50V 0603	2823	4822 124 23002	10μF 20% 16V	3072	4822 051 30271	270Ω 5% 0.062W
2640	2238 586 59812	100nF 20-80% 50V 0603	2824	4822 126 14247	1.5nF 50V 0603	3073	4822 051 30223	22kΩ 5% 0.062W
2641	3198 016 31020	1nF 10% 25V 0603	2825	3198 016 31020	1nF 10% 25V 0603	3074	4822 051 30221	220Ω 5% 0.062W
2642	4822 124 23002	10μF 20% 16V	2826	4822 126 14472	1μF 10% 10V 0805	3075	4822 051 30561	560Ω 5% 0.062W
2643	4822 124 23002	10μF 20% 16V	2827	4822 126 14472	1μF 10% 10V 0805	3076	4822 051 30759	75Ω 5% 0.062W
2644	4822 124 23002	10μF 20% 16V	2828	3198 016 31020	1nF 10% 25V 0603	3077	4822 051 30271	270Ω 5% 0.062W
2645	4822 124 23002	10μF 20% 16V	2829	4822 124 23002	10μF 20% 16V	3078	4822 051 30223	22kΩ 5% 0.062W
2646	4822 124 23002	10μF 20% 16V	2830	2238 586 59812	100nF 20-80% 50V 0603	3079	4822 051 30221	220Ω 5% 0.062W
2647	4822 124 23002	10μF 20% 16V	2831	2238 586 59812	100nF 20-80% 50V 0603	3080	4822 051 30561	560Ω 5% 0.062W
2648	4822 124 23002	10μF 20% 16V	2833	4822 126 14247	1.5nF 50V 0603	3081	4822 051 30759	75Ω 5% 0.062W
2649	4822 124 23002	10μF 20% 16V	2834	4822 124 23002	10μF 20% 16V	3082	4822 051 30271	270Ω 5% 0.062W
2655	2238 586 59812	100nF 20-80% 50V 0603	2837	4822 126 13881	470pF 5% 50V	3083	4822 051 30223	22kΩ 5% 0.062W
2656	2238 586 59812	100nF 20-80% 50V 0603	2838	4822 126 13881	470pF 5% 50V	3084	4822 051 30221	220Ω 5% 0.062W
2657	2238 586 59812	100nF 20-80% 50V 0603	2839	4822 126 13881	470pF 5% 50V	3085	4822 051 30561	560Ω 5% 0.062W
2658	2238 586 59812	100nF 20-80% 50V 0603	2840	4822 126 11669	27pF 5% 50V 0603	3086	5322 117 13034	1.5kΩ 1% 0.063W 0603
2659	2238 586 59812	100nF 20-80% 50V 0603	2842	2238 586 59812	100nF 20-80% 50V 0603	3087	5322 117 13057	820Ω 1% 0.063W 0603
2660	2238 586 59812	100nF 20-80% 50V 0603	2843	4822 126 11669	27pF 5% 50V 0603	3088	5322 117 13057	820Ω 1% 0.063W 0603
2661	2238 586 59812	100nF 20-80% 50V 0603	2844	3198 016 31020	1nF 10% 25V 0603	3089	5322 117 13034	1.5kΩ 1% 0.063W 0603
2662	2238 586 59812	100nF 20-80% 50V 0603	2845	4822 126 13883	220pF 5% 50V	3090	5322 117 13051	680Ω 1% 0.063W 0603
2663	2238 586 59812	100nF 20-80% 50V 0603	2848	4822 126 11669	27pF 5% 50V 0603	3091	5322 117 13047	330Ω 1% 0.063W 0603
2670	2238 586 59812	100nF 20-80% 50V 0603	2849	3198 016 31020	1nF 10% 25V 0603	3092	5322 117 13047	330Ω 1% 0.063W 0603
2671	2238 586 59812	100nF 20-80% 50V 0603	2850	4822 126 11669	27pF 5% 50V 0603	3093	5322 117 13051	680Ω 1% 0.063W 0603
2672	2238 586 59812	100nF 20-80% 50V 0603	2852	2238 586 59812	100nF 20-80% 50V 0603	3094	5322 117 13018	1kΩ 1% 0.063W 0603
2673	2238 586 59812	100nF 20-80% 50V 0603	2853	4822 126 11669	27pF 5% 50V 0603	3095	5322 117 13036	1.2kΩ 1% 0.063W 0603
2674	2238 586 59812	100nF 20-80% 50V 0603	2854	3198 016 31020	1nF 10% 25V 0603	3096	5322 117 13049	470Ω 1% 0.063W 0603
2694	3198 016 31080	1pF 25% 50V 0603	2857	3198 016 31020	1nF 10% 25V 0603	3097	5322 117 13062	390Ω 1% 0.063W 0603
2695	3198 016 31080	1pF 25% 50V 0603	2858	4822 126 11669	27pF 5% 50V 0603	3098	5322 117 13018	1kΩ 1% 0.063W 0603
2696	3198 016 31080	1pF 25% 50V 0603	2861	2238 586 59812	100nF 20-80% 50V 0603	3099	5322 117 13018	1kΩ 1% 0.063W 0603
2697	3198 016 31080	1pF 25% 50V 0603	2862	4822 126 11785	47pF 5% 50V 0603	3100	5322 117 13034	1.5kΩ 1% 0.063W 0603
2698	3198 016 31080	1pF 25% 50V 0603	2863	4822 126 14472	1μF 10% 10V 0805	3101	5322 117 13051	680Ω 1% 0.063W 0603
2699	3198 016 31080	1pF 25% 50V 0603	2865	4822 126 11785	47pF 5% 50V 0603	3102	5322 117 13046	1.8kΩ 1% 0.063W 0603
2711	2020 552 94427	100pF 5% 50v 0603	2867	4822 126 13879	220nF 20% 16V	3103	5322 117 13047	330Ω 1% 0.063W 0603
2712	4822 126 14472	1μF 10% 10V 0805	2868	4822 126 14472	1μF 10% 10V 0805	3104	5322 117 13042	3.9kΩ 1% 0.063W 0603
2715	2238 586 59812	100nF 20-80% 50V 0603	2869	4822 126 14247	1.5nF 50V 0603	3105	5322 117 13036	1.2kΩ 1% 0.063W 0603
2716	4822 126 11785	47pF 5% 50V 0603	2870	2238 586 59812	100nF 20-80% 50V 0603	3106	5322 117 13036	1.2kΩ 1% 0.063W 0603
2717	4822 126 14472	1μF 10% 10V 0805	2874	2238 586 59812	100nF 20-80% 50V 0603	3107	5322 117 13042	3.9kΩ 1% 0.063W 0603
2721	2020 552 94427	100pF 5% 50v 0603	2879	4822 126 11669	27pF 5% 50V 0603	3108	5322 117 13037	2.2kΩ 0.063W 0603
2722	4822 126 14472	1μF 10% 10V 0805	2880	2238 586 59812	100nF 20-80% 50V 0603	3109	5322 117 13036	1.2kΩ 1% 0.063W 0603
2726	4822 126 11785	47pF 5% 50V 0603	2881	2238 586 59812	100nF 20-80% 50V 0603	3110	5322 117 13036	1.2kΩ 1% 0.063W 0603
2727	4822 126 14472	1μF 10% 10V 0805	2882	2238 586 59812	100nF 20-80% 50V 0603	3111	5322 117 13037	2.2kΩ 0.063W 0603
2731	2020 552 94427	100pF 5% 50v 0603				3112	4822 051 30271	270Ω 5% 0.062W
2732	4822 126 14472	1μF 10% 10V 0805				3113	4822 051 30223	22kΩ 5% 0.062W
2735	2238 586 59812	100nF 20-80% 50V 0603				3114	5322 117 13026	4.7kΩ 1% 0.063W 0603
2736	4822 126 11785	47pF 5% 50V 0603				3115	4822 051 30102	1kΩ 5% 0.062W
2737	4822 126 14472	1μF 10% 10V 0805				3116	4822 051 30271	270Ω 5% 0.062W
2741	2020 552 94427	100pF 5% 50v 0603				3117	4822 051 30223	22kΩ 5% 0.062W
2742	4822 126 14472	1μF 10% 10V 0805				3118	5322 117 13026	4.7kΩ 1% 0.063W 0603
2746	4822 126 11785	47pF 5% 50V 0603				3119	4822 051 30102	1kΩ 5% 0.062W
2747	4822 126 14472	1μF 10% 10V 0805				3120	4822 051 30271	270Ω 5% 0.062W
2751	2020 552 94427	100pF 5% 50v 0603				3121	4822 051 30223	22kΩ 5% 0.062W
2752	4822 126 14472	1μF 10% 10V 0805				3122	5322 117 13037	2.2kΩ 0.063W 0603
2755	2238 586 59812	100nF 20-80% 50V 0603				3123	4822 051 30102	1kΩ 5% 0.062W
2756	4822 126 11785	47pF 5% 50V 0603				3124	5322 117 13037	2.2kΩ 0.063W 0603
2757	4822 126 14472	1μF 10% 10V 0805				3125	5322 117 13026	4.7kΩ 1% 0.063W 0603
2761	2020 552 94427	100pF 5% 50v 0603				3126	5322 117 13042	3.9kΩ 1% 0.063W 0603
2762	4822 126 14472	1μF 10% 10V 0805				3127	5322 117 13026	4.7kΩ 1% 0.063W 0603
2766	4822 126 11785	47pF 5% 50V 0603				3128	5322 117 13026	4.7kΩ 1% 0.063W 0603
2767	4822 126 14472	1μF 10% 10V 0805				3129	4822 051 30331	330Ω 5% 0.062W
2771	2020 552 94427	100pF 5% 50v 0603				3130	4822 051 30331	330Ω 5% 0.062W
2772	4822 126 14472	1μF 10% 10V 0805				3131	4822 051 30331	330Ω 5% 0.062W
2775	2020 552 94427	100pF 5% 50v 0603				3132	4822 051 30221	220Ω 5% 0.062W
2776	4822 126 14472	1μF 10% 10V 0805				3133	4822 051 30101	100Ω 5% 0.062W
2779	2020 552 94427	100pF 5% 50v 0603				3133	4822 051 30331	330Ω 5% 0.062W
2780	4822 126 14472	1μF 10% 10V 0805				3134	4822 051 30271	270Ω 5% 0.062W
2783	2020 552 94427	100pF 5% 50v 0603				3135	4822 051 30223	22kΩ 5% 0.062W
2784	4822 126 14472	1μF 10% 10V 0805				3136	4822 051 30561	560Ω 5% 0.062W
2787	2020 552 94427	100pF 5% 50v 0603				3137	4822 051 30271	270Ω 5% 0.062W
2788	4822 126 14472	1μF 10% 10V 0805				3138	4822 051 30223	22kΩ 5% 0.062W
2791	2020 552 94427	100pF 5% 50v 0603				3139	4822 051 30561	560Ω 5% 0.062W
2792	4822 126 14472	1μF 10% 10V 0805				3140</		

Spare Parts List

FM242 AB

10.

EN 85

3149	4822 051 30561	560Ω 5% 0.062W	3311	4822 051 30102	1kΩ 5% 0.062W	3423	4822 051 30103	10kΩ 5% 0.062W
3150	4822 051 30271	270Ω 5% 0.062W	3312	4822 117 12903	1.8kΩ 1% 0.063W 0603	3424	4822 051 30332	3.3kΩ 5% 0.062W
3151	4822 051 30223	22kΩ 5% 0.062W	3313	4822 051 30103	10kΩ 5% 0.062W	3426	4822 051 30332	3.3kΩ 5% 0.062W
3152	4822 051 30561	560Ω 5% 0.062W	3314	4822 117 12903	1.8kΩ 1% 0.063W 0603	3428	4822 051 30101	100Ω 5% 0.062W
3153	4822 051 30271	270Ω 5% 0.062W	3315	4822 051 30471	470Ω 5% 0.062W	3429	4822 051 30101	100Ω 5% 0.062W
3154	4822 051 30223	22kΩ 5% 0.062W	3316	4822 051 30153	15kΩ 5% 0.062W	3430	4822 051 30472	4.7kΩ 5% 0.062W
3155	4822 051 30561	560Ω 5% 0.062W	3317	4822 051 30472	4.7kΩ 5% 0.062W	3431	4822 051 30101	100Ω 5% 0.062W
3156	4822 051 30271	270Ω 5% 0.062W	3318	4822 051 30271	270Ω 5% 0.062W	3432	4822 051 30472	4.7kΩ 5% 0.062W
3157	4822 051 30223	22kΩ 5% 0.062W	3319	4822 051 30273	27kΩ 5% 0.062W	3433	4822 051 30101	100Ω 5% 0.062W
3158	4822 051 30561	560Ω 5% 0.062W	3320	4822 051 30102	1kΩ 5% 0.062W	3435	4822 051 30273	27kΩ 5% 0.062W
3159	4822 051 30271	270Ω 5% 0.062W	3321	4822 051 30102	1kΩ 5% 0.062W	3436	4822 117 12891	220kΩ 1% 0.063W 0603
3160	4822 051 30223	22kΩ 5% 0.062W	3322	4822 117 12903	1.8kΩ 1% 0.063W 0603	3448	3198 031 11010	4 x 100Ω 5% 1206
3161	4822 051 30561	560Ω 5% 0.062W	3323	4822 051 30103	10kΩ 5% 0.062W	3449	3198 031 11010	4 x 100Ω 5% 1206
3162	4822 051 30101	100Ω 5% 0.062W	3324	4822 117 12903	1.8kΩ 1% 0.063W 0603	3450	4822 051 30101	100Ω 5% 0.062W
3162	4822 051 30331	330Ω 5% 0.062W	3325	4822 051 30471	470Ω 5% 0.062W	3451	3198 031 11010	4 x 100Ω 5% 1206
3163	4822 051 30101	100Ω 5% 0.062W	3326	4822 051 30102	1kΩ 5% 0.062W	3452	3198 031 11010	4 x 100Ω 5% 1206
3164	4822 051 30471	470Ω 5% 0.062W	3327	4822 051 30103	10kΩ 5% 0.062W	3453	3198 031 11010	4 x 100Ω 5% 1206
3165	4822 051 30221	220Ω 5% 0.062W	3328	4822 051 30271	270Ω 5% 0.062W	3460	3198 031 11010	4 x 100Ω 5% 1206
3166	4822 051 30101	100Ω 5% 0.062W	3329	4822 051 30273	27kΩ 5% 0.062W	3461	3198 031 11010	4 x 100Ω 5% 1206
3166	4822 051 30331	330Ω 5% 0.062W	3330	4822 051 30102	1kΩ 5% 0.062W	3462	3198 031 11010	4 x 100Ω 5% 1206
3170	4822 051 30101	100Ω 5% 0.062W	3331	4822 051 30102	1kΩ 5% 0.062W	3463	3198 031 11010	4 x 100Ω 5% 1206
3171	4822 051 30101	100Ω 5% 0.062W	3332	4822 117 12903	1.8kΩ 1% 0.063W 0603	3464	3198 031 11010	4 x 100Ω 5% 1206
3172	4822 051 30101	100Ω 5% 0.062W	3333	4822 051 30103	10kΩ 5% 0.062W	3483	4822 051 30471	470Ω 5% 0.062W
3173	4822 051 30103	10kΩ 5% 0.062W	3334	4822 117 12903	1.8kΩ 1% 0.063W 0603	3485	4822 051 30151	150Ω 5% 0.062W
3174	4822 051 30102	1kΩ 5% 0.062W	3335	4822 051 30471	470Ω 5% 0.062W	3486	4822 051 30151	150Ω 5% 0.062W
3175	4822 051 30102	1kΩ 5% 0.062W	3336	4822 051 30103	10kΩ 5% 0.062W	3487	4822 051 30151	150Ω 5% 0.062W
3176	4822 051 30103	10kΩ 5% 0.062W	3337	4822 051 30103	10kΩ 5% 0.062W	3488	4822 051 30222	2.2kΩ 5% 0.062W
3177	4822 051 30561	560Ω 5% 0.062W	3338	4822 051 30333	33kΩ 5% 0.062W	3489	4822 051 30222	2.2kΩ 5% 0.062W
3178	4822 051 30103	10kΩ 5% 0.062W	3339	4822 051 30103	10kΩ 5% 0.062W	3490	4822 051 30102	1kΩ 5% 0.062W
3179	4822 051 30561	560Ω 5% 0.062W	3340	4822 051 30103	10kΩ 5% 0.062W	3494	3198 031 14710	4 x 470Ω 5% 1206
3180	4822 051 30561	560Ω 5% 0.062W	3344	4822 051 30472	4.7kΩ 5% 0.062W	3496	4822 051 30103	10kΩ 5% 0.062W
3181	4822 051 30103	10kΩ 5% 0.062W	3346	4822 051 30103	10kΩ 5% 0.062W	3502	4822 051 30008	Jumper 0603
3182	4822 051 30103	10kΩ 5% 0.062W	3348	4822 051 30474	470kΩ 5% 0.062W	3506	4822 051 30332	3.3kΩ 5% 0.062W
3183	4822 051 30103	10kΩ 5% 0.062W	3349	4822 051 30333	33kΩ 5% 0.062W	3507	4822 051 30472	4.7kΩ 5% 0.062W
3184	4822 051 30103	10kΩ 5% 0.062W	3350	4822 051 30101	100Ω 5% 0.062W	3510	4822 051 30102	1kΩ 5% 0.062W
3186	4822 051 30103	10kΩ 5% 0.062W	3351	4822 051 30689	68Ω 5% 0.063W 0603	3511	4822 051 30222	2.2kΩ 5% 0.062W
3188	4822 051 30221	220Ω 5% 0.062W	3352	4822 051 30103	10kΩ 5% 0.062W	3512	4822 051 30562	5.6kΩ 5% 0.063W 0603
3189	4822 051 30221	220Ω 5% 0.062W	3353	4822 051 30101	100Ω 5% 0.062W	3513	4822 051 30332	3.3kΩ 5% 0.062W
3190	4822 051 30221	220Ω 5% 0.062W	3354	4822 051 30101	100Ω 5% 0.062W	3514	4822 051 30472	4.7kΩ 5% 0.062W
3200	4822 051 30101	100Ω 5% 0.062W	3355	4822 051 30103	10kΩ 5% 0.062W	3515	4822 117 12925	47kΩ 1% 0.063W 0603
3203	4822 051 30101	100Ω 5% 0.062W	3356	4822 051 30103	10kΩ 5% 0.062W	3516	4822 117 12925	47kΩ 1% 0.063W 0603
3204	4822 051 30101	100Ω 5% 0.062W	3357	4822 051 30103	10kΩ 5% 0.062W	3517	4822 051 30102	1kΩ 5% 0.062W
3205	4822 051 30101	100Ω 5% 0.062W	3358	4822 051 30472	4.7kΩ 5% 0.062W	3518	4822 117 13632	200kΩ 1% 0603 0.62W
3206	4822 051 30102	1kΩ 5% 0.062W	3359	4822 051 30689	68Ω 5% 0.063W 0603	3519	4822 051 30222	2.2kΩ 5% 0.062W
3207	4822 051 30103	10kΩ 5% 0.062W	3363	4822 051 30472	4.7kΩ 5% 0.062W	3520	4822 051 30222	2.2kΩ 5% 0.062W
3208	4822 051 30332	3.3kΩ 5% 0.062W	3364	4822 117 12925	47kΩ 1% 0.063W 0603	3530	4822 051 30101	100Ω 5% 0.062W
3209	4822 051 30101	100Ω 5% 0.062W	3365	4822 051 30474	470kΩ 5% 0.062W	3531	4822 051 30101	100Ω 5% 0.062W
3210	4822 051 30101	100Ω 5% 0.062W	3366	4822 051 30102	1kΩ 5% 0.062W	3532	4822 051 30101	100Ω 5% 0.062W
3211	4822 051 30102	1kΩ 5% 0.062W	3367	4822 051 30103	10kΩ 5% 0.062W	3536	5322 117 13037	2.2kΩ 0.063W 0603
3212	4822 051 30102	1kΩ 5% 0.062W	3368	4822 051 30103	10kΩ 5% 0.062W	3540	4822 051 30101	100Ω 5% 0.062W
3214	4822 051 30472	4.7kΩ 5% 0.062W	3369	4822 051 30472	4.7kΩ 5% 0.062W	3541	4822 051 30101	100Ω 5% 0.062W
3215	4822 051 30101	100Ω 5% 0.062W	3370	4822 051 30474	470kΩ 5% 0.062W	3545	4822 051 30008	Jumper 0603
3216	4822 051 30103	10kΩ 5% 0.062W	3371	4822 051 30101	100Ω 5% 0.062W	3547	4822 051 30102	1kΩ 5% 0.062W
3217	4822 051 30101	100Ω 5% 0.062W	3372	4822 051 30103	10kΩ 5% 0.062W	3548	4822 051 30102	1kΩ 5% 0.062W
3218	4822 051 30472	4.7kΩ 5% 0.062W	3373	4822 051 30222	2.2kΩ 5% 0.062W	3550	4822 051 30101	100Ω 5% 0.062W
3219	4822 117 12139	22Ω 5% 0.062W	3375	4822 117 13632	100kΩ 1% 0603 0.62W	3551	4822 051 30101	100Ω 5% 0.062W
3225	4822 051 30472	4.7kΩ 5% 0.062W	3376	4822 051 30472	4.7kΩ 5% 0.062W	3552	4822 051 30101	100Ω 5% 0.062W
3250	4822 051 30101	100Ω 5% 0.062W	3377	4822 051 30101	100Ω 5% 0.062W	3553	4822 051 30101	100Ω 5% 0.062W
3251	4822 051 30101	100Ω 5% 0.062W	3379	4822 051 30222	2.2kΩ 5% 0.062W	3556	4822 051 30222	2.2kΩ 5% 0.062W
3260	4822 051 30472	4.7kΩ 5% 0.062W	3380	3198 031 11010	4 x 100Ω 5% 1206	3557	4822 051 30101	100Ω 5% 0.062W
3261	4822 051 30471	470Ω 5% 0.062W	3381	3198 031 11010	4 x 100Ω 5% 1206	3558	4822 051 30101	100Ω 5% 0.062W
3263	4822 051 30472	4.7kΩ 5% 0.062W	3382	3198 031 11010	4 x 100Ω 5% 1206	3559	4822 051 30101	100Ω 5% 0.062W
3271	4822 051 30101	100Ω 5% 0.062W	3383	3198 031 11010	4 x 100Ω 5% 1206	3560	4822 051 30101	100Ω 5% 0.062W
3274	5322 117 12534	18Ω 2% 0.1W 0805	3384	4822 051 30101	100Ω 5% 0.062W	3561	4822 051 30008	Jumper 0603
3275	5322 117 12534	18Ω 2% 0.1W 0805	3385	4822 051 30102	1kΩ 5% 0.062W	3562	4822 051 30103	10kΩ 5% 0.062W
3276	5322 117 12534	18Ω 2% 0.1W 0805	3386	4822 051 30222	2.2kΩ 5% 0.062W	3563	4822 051 30008	Jumper 0603
3277	2322 734 65609	56Ω 1% 0.125W 0805	3387	4822 051 30102	1kΩ 5% 0.062W	3566	4822 051 30103	10kΩ 5% 0.062W
3278	2322 734 65609	56Ω 1% 0.125W 0805	3388	4822 051 30102	1kΩ 5% 0.062W	3567	4822 051 30103	10kΩ 5% 0.062W
3279	2322 734 65609	56Ω 1% 0.125W 0805	3389	4822 051 30101	100Ω 5% 0.062W	3568	4822 051 30008	Jumper 0603
3284	4822 051 30101	100Ω 5% 0.062W	3390	4822 051 30102	1kΩ 5% 0.062W	3570	4822 051 30332	3.3kΩ 5% 0.062W
3285	4822 051 30101	100Ω 5% 0.062W	3391	4822 051 30333	33kΩ 5% 0.062W	3571	4822 051 30101	100Ω 5% 0.062W
3286	3198 031 11010	4 x 100Ω 5% 1206	3392	4822 051 30101	100Ω 5% 0.062W	3572	4822 051 30008	Jumper 0603
3289	3198 031 11010	4 x 100Ω 5% 1206	3393	4822 051 30102	1kΩ 5% 0.062W	3575	4822 051 30102	1kΩ 5% 0.062W
3290	3198 031 11010	4 x 100Ω 5% 1206	3394	4822 051 30222	2.2kΩ 5% 0.062W	3578	4822 051 30151	150Ω 5% 0.062W
3291	3198 031 11010	4 x 100Ω 5% 1206	3398	3198 031 11010	4 x 100Ω 5% 1206	3580	4822 051 30472	4.7kΩ 5% 0.062W
3292	3198 031 11010	4 x 100Ω 5% 1206	3400	4822 051 30103	10kΩ 5% 0.062W	3581	4822 051 30101	100Ω 5% 0.062W
3293	4822 051 30101	100Ω 5% 0.062W	3400	4822 051 30222	2.2kΩ 5% 0.062W	3582	4822 051 30101	100Ω 5% 0.062W
3294	4822 051 30102	1kΩ 5% 0.062W	3400	4822 051 30393	39kΩ 5% 0.062W	3583	4822 051 30472	4.7kΩ 5% 0.062W
3295	4822 051 30103	10kΩ 5% 0.062W	3400	4822 051 30472	4.7kΩ 5% 0.062W	3590	4822 051 30332	3.3kΩ 5% 0.062W
3296	4822 051 30474	470kΩ 5% 0.062W	3402	3198 031 11010	4 x 100Ω 5% 1206	3591	4822 051 30332	3.3kΩ 5% 0.062W
3297	4822 051 30103	10kΩ 5% 0.062W	3404	3198 031 11010	4 x 100Ω 5% 1206	3592	4822 051 30332	3.3kΩ 5% 0.062W
3298	4822 051 30103	10kΩ 5% 0.062W	3405	4822 051 30332	3.3kΩ 5% 0.062W	3593	4822 051 30332	3.3kΩ 5% 0.062W
3299	4822 051 30103	10kΩ 5% 0.062W	3406	3198 031 11010	4 x 100Ω 5% 1206	3594	4822 051 30472	4.7kΩ 5% 0.062W
3300	4822 051 30153	15kΩ 5% 0.062W	3410	4822 051 30222	2.2kΩ 5% 0.062W			

3611	4822 051 30101	100Ω 5% 0.062W	3785	4822 051 30103	10kΩ 5% 0.062W	4152	4822 051 30008	Jumper 0603
3612	4822 051 30332	3.3kΩ 5% 0.062W	3787	4822 051 30102	1kΩ 5% 0.062W	4158	4822 051 30008	Jumper 0603
3613	4822 051 30332	3.3kΩ 5% 0.062W	3788	4822 051 30332	3.3kΩ 5% 0.062W	4201	4822 051 30008	Jumper 0603
3615	4822 051 30101	100Ω 5% 0.062W	3789	4822 051 30103	10kΩ 5% 0.062W	4202	4822 051 30008	Jumper 0603
3616	4822 051 30102	1kΩ 5% 0.062W	3791	4822 051 30102	1kΩ 5% 0.062W	4203	4822 051 30008	Jumper 0603
3617	4822 051 30102	1kΩ 5% 0.062W	3792	4822 051 30332	3.3kΩ 5% 0.062W	4250	4822 051 30008	Jumper 0603
3620	4822 051 30103	10kΩ 5% 0.062W	3793	4822 051 30103	10kΩ 5% 0.062W	4315	4822 051 30008	Jumper 0603
3621	4822 051 30103	10kΩ 5% 0.062W	3794	4822 051 30101	100Ω 5% 0.062W	4325	4822 051 30008	Jumper 0603
3622	4822 051 30479	47Ω 5% 0.062W	3795	4822 051 30101	100Ω 5% 0.062W	4335	4822 051 30008	Jumper 0603
3623	4822 051 30102	1kΩ 5% 0.062W	3796	4822 051 30472	4.7kΩ 5% 0.062W	4385	4822 051 30008	Jumper 0603
3625	4822 051 30332	3.3kΩ 5% 0.062W	3797	4822 051 30472	4.7kΩ 5% 0.062W	4431	4822 051 30008	Jumper 0603
3626	4822 051 30332	3.3kΩ 5% 0.062W	3798	4822 051 30333	33kΩ 5% 0.062W	4572	4822 051 30008	Jumper 0603
3627	4822 051 30332	3.3kΩ 5% 0.062W	3800	4822 051 30331	330Ω 5% 0.062W	4574	4822 051 30008	Jumper 0603
3628	4822 051 30101	100Ω 5% 0.062W	3801	4822 051 30331	330Ω 5% 0.062W	4582	4822 051 30008	Jumper 0603
3630	4822 051 30102	1kΩ 5% 0.062W	3802	4822 051 30333	33kΩ 5% 0.062W	4605	4822 051 30008	Jumper 0603
3632	4822 051 30332	3.3kΩ 5% 0.062W	3803	4822 117 13632	100kΩ 1% 0603 0.62W	4659	4822 051 30008	Jumper 0603
3633	4822 051 30472	4.7kΩ 5% 0.062W	3804	4822 051 30333	33kΩ 5% 0.062W	4680	4822 051 30008	Jumper 0603
3634	4822 051 30332	3.3kΩ 5% 0.062W	3805	4822 117 13632	100kΩ 1% 0603 0.62W	4684	4822 051 30008	Jumper 0603
3636	4822 051 30332	3.3kΩ 5% 0.062W	3806	4822 117 13632	100kΩ 1% 0603 0.62W	4794	4822 051 30008	Jumper 0603
3637	4822 051 30102	1kΩ 5% 0.062W	3807	4822 117 13632	100kΩ 1% 0603 0.62W	4797	4822 051 30008	Jumper 0603
3638	4822 051 30102	1kΩ 5% 0.062W	3808	4822 117 13632	100kΩ 1% 0603 0.62W	4800	4822 051 30008	Jumper 0603
3639	4822 051 30102	1kΩ 5% 0.062W	3809	4822 051 30333	33kΩ 5% 0.062W	4801	4822 051 30008	Jumper 0603
3640	4822 051 30222	2.2kΩ 5% 0.062W	3810	4822 051 30472	4.7kΩ 5% 0.062W	4810	4822 051 30008	Jumper 0603
3641	4822 051 30101	100Ω 5% 0.062W	3811	4822 051 30472	4.7kΩ 5% 0.062W	4811	4822 051 30008	Jumper 0603
3641	4822 051 30102	1kΩ 5% 0.062W	3812	4822 051 30101	100Ω 5% 0.062W	4871	4822 051 30008	Jumper 0603
3653	4822 051 30102	1kΩ 5% 0.062W	3813	4822 051 30101	100Ω 5% 0.062W	4874	4822 051 30008	Jumper 0603
3654	4822 051 30102	1kΩ 5% 0.062W	3815	4822 051 30101	100Ω 5% 0.062W	4875	4822 051 30008	Jumper 0603
3655	4822 051 30102	1kΩ 5% 0.062W	3816	4822 051 30101	100Ω 5% 0.062W	4884	4822 051 30008	Jumper 0603
3657	4822 051 30103	10kΩ 5% 0.062W	3817	4822 051 30101	100Ω 5% 0.062W	4894	4822 051 30008	Jumper 0603
3658	4822 051 30103	10kΩ 5% 0.062W	3818	4822 051 30101	100Ω 5% 0.062W			
3660	4822 051 30101	100Ω 5% 0.062W	3820	4822 051 30333	33kΩ 5% 0.062W			
3661	4822 051 30101	100Ω 5% 0.062W	3821	4822 051 30103	10kΩ 5% 0.062W			
3662	4822 051 30101	100Ω 5% 0.062W	3822	4822 051 30333	33kΩ 5% 0.062W			
3663	4822 051 30101	100Ω 5% 0.062W	3836	4822 117 13632	100kΩ 1% 0603 0.62W			
3664	4822 051 30101	100Ω 5% 0.062W	3837	4822 117 13632	100kΩ 1% 0603 0.62W			
3665	4822 051 30101	100Ω 5% 0.062W	3840	4822 051 30223	22kΩ 5% 0.062W			
3667	4822 051 30101	100Ω 5% 0.062W	3841	4822 051 30223	22kΩ 5% 0.062W			
3668	4822 051 30101	100Ω 5% 0.062W	3843	4822 051 30393	39kΩ 5% 0.062W			
3673	4822 051 30103	10kΩ 5% 0.062W	3844	4822 051 30101	100Ω 5% 0.062W			
3674	4822 051 30101	100Ω 5% 0.062W	3845	4822 051 30101	100Ω 5% 0.062W			
3675	4822 051 30103	10kΩ 5% 0.062W	3846	4822 051 30223	22kΩ 5% 0.062W			
3676	4822 051 30101	100Ω 5% 0.062W	3847	4822 051 30393	39kΩ 5% 0.062W			
3677	4822 051 30101	100Ω 5% 0.062W	3848	4822 051 30393	39kΩ 5% 0.062W			
3679	4822 051 30101	100Ω 5% 0.062W	3849	4822 051 30101	100Ω 5% 0.062W			
3681	4822 051 30332	3.3kΩ 5% 0.062W	3850	4822 051 30223	22kΩ 5% 0.062W			
3682	4822 051 30471	470Ω 5% 0.062W	3851	4822 051 30223	22kΩ 5% 0.062W			
3685	4822 051 30332	3.3kΩ 5% 0.062W	3853	4822 051 30393	39kΩ 5% 0.062W			
3686	4822 051 30471	470Ω 5% 0.062W	3854	4822 051 30101	100Ω 5% 0.062W			
3688	4822 051 30471	470Ω 5% 0.062W	3855	4822 051 30101	100Ω 5% 0.062W			
3689	4822 051 30471	470Ω 5% 0.062W	3856	4822 051 30223	22kΩ 5% 0.062W			
3710	4822 051 30333	33kΩ 5% 0.062W	3857	4822 051 30393	39kΩ 5% 0.062W			
3711	4822 051 30102	1kΩ 5% 0.062W	3858	4822 051 30393	39kΩ 5% 0.062W			
3713	4822 051 30101	100Ω 5% 0.062W	3859	4822 051 30101	100Ω 5% 0.062W			
3714	4822 051 30223	22kΩ 5% 0.062W	3860	4822 117 12902	8.2kΩ 1% 0.063W 0603			
3716	4822 051 30153	15kΩ 5% 0.062W	3861	4822 051 30223	22kΩ 5% 0.062W			
3717	4822 051 30333	33kΩ 5% 0.062W	3862	4822 051 30273	27kΩ 5% 0.062W			
3718	4822 051 30103	10kΩ 5% 0.062W	3863	4822 117 12902	8.2kΩ 1% 0.063W 0603			
3719	4822 051 30333	33kΩ 5% 0.062W	3864	4822 051 30223	22kΩ 5% 0.062W			
3720	4822 051 30333	33kΩ 5% 0.062W	3865	4822 051 30273	27kΩ 5% 0.062W			
3721	4822 051 30102	1kΩ 5% 0.062W	3866	4822 051 30101	100Ω 5% 0.062W			
3723	4822 051 30101	100Ω 5% 0.062W	3867	4822 051 30101	100Ω 5% 0.062W			
3724	4822 051 30223	22kΩ 5% 0.062W	3870	4822 051 30101	100Ω 5% 0.062W			
3726	4822 051 30153	15kΩ 5% 0.062W	3879	4822 117 12925	47kΩ 1% 0.063W 0603			
3730	4822 051 30333	33kΩ 5% 0.062W	3880	4822 051 30471	470Ω 5% 0.062W			
3731	4822 051 30331	330Ω 5% 0.062W	3900	4822 051 30472	4.7kΩ 5% 0.062W			
3733	4822 051 30101	100Ω 5% 0.062W	3901	4822 051 30333	33kΩ 5% 0.062W			
3734	4822 051 30223	22kΩ 5% 0.062W	3902	4822 051 30471	470Ω 5% 0.062W			
3736	4822 051 30153	15kΩ 5% 0.062W	3903	4822 051 30471	470Ω 5% 0.062W			
3740	4822 051 30333	33kΩ 5% 0.062W	3904	4822 051 30471	470Ω 5% 0.062W			
3741	4822 051 30331	330Ω 5% 0.062W	3905	4822 051 30103	10kΩ 5% 0.062W			
3743	4822 051 30101	100Ω 5% 0.062W	3906	4822 051 30103	10kΩ 5% 0.062W			
3744	4822 051 30223	22kΩ 5% 0.062W	3907	4822 051 30103	10kΩ 5% 0.062W			
3746	4822 051 30153	15kΩ 5% 0.062W	3908	4822 051 30103	10kΩ 5% 0.062W			
3750	4822 051 30333	33kΩ 5% 0.062W	3909	4822 051 30152	1.5kΩ 5% 0.062W			
3751	4822 051 30102	1kΩ 5% 0.062W	3910	4822 051 30102	1kΩ 5% 0.062W			
3753	4822 051 30101	100Ω 5% 0.062W	3911	4822 117 12925	47kΩ 1% 0.063W 0603			
3754	4822 051 30223	22kΩ 5% 0.062W	3912	4822 051 30472	4.7kΩ 5% 0.062W			
3756	4822 051 30153	15kΩ 5% 0.062W	3913	4822 051 30101	100Ω 5% 0.062W			
3760	4822 051 30333	33kΩ 5% 0.062W	3917	4822 051 30472	4.7kΩ 5% 0.062W			
3761	4822 051 30102	1kΩ 5% 0.062W	3918	4822 051 30102	1kΩ 5% 0.062W			
3763	4822 051 30101	100Ω 5% 0.062W	3919	4822 051 30102	1kΩ 5% 0.062W			
3764	4822 051 30223	22kΩ 5% 0.062W	3922	4822 051 30102	1kΩ 5% 0.062W			
3766	4822 051 30153	15kΩ 5% 0.062W	3923	4822 051 30472	4.7kΩ 5% 0.062W			
3771	4822 051 30102	1kΩ 5% 0.062W	3924	4822 051 30331	330Ω 5% 0.062W			
3772	4822 051 30332	3.3kΩ 5% 0.062W	3925	4822 051 30151	150Ω 5% 0.062W			
3773	4822 051 30103	10kΩ 5% 0.062W	3925	4822 051 30331	330Ω 5% 0.062W			
3775	4822 051 30102	1kΩ 5% 0.062W	3926	4822 051 30331	330Ω 5% 0.062W			
3776	4822 051 30332	3.3kΩ 5% 0.062W	3927	4822 051 30331	330Ω 5% 0.062W			
3777	4822 051 30103	10kΩ 5% 0.062W	3928	4822 051 30331	330Ω 5% 0.062W			
3779	4822 051 30102	1kΩ 5% 0.062W	4006	4822 051 30008	Jumper 0603			
3780	4822 051 30332	3.3kΩ 5% 0.062W	4007	4822 051 30008	Jumper 0603			
3781	4822 051 30103	10kΩ 5% 0.062W	4009	4822 051 30008	Jumper 0603			
3783	4822 051 30102	1kΩ 5% 0.062W	4010	4822 051 30008	Jumper 0603			
3784	4822 051 30332	3.3kΩ 5% 0.062W	4146	4822 051 30008	Jumper 0603			

5000	2422 549 43769	Bead 30Ω at 100MHz
5007	2422 549 43769	Bead 30Ω at 100MHz
5009	2422 549 43769	Bead 30Ω at 100MHz
5020	2422 549 43769	Bead 30Ω at 100MHz
5060	2422 549 43769	Bead 30Ω at 100MHz
5089	2422 549 43062	Bead 600Ω at 100MHz
5140	2422 549 43062	Bead 600Ω at 100MHz
5160	2422 549 43062	Bead 600Ω at 100MHz
5161	2422 549 43062	Bead 600Ω at 100MHz
5162	2422 549 43062	Bead 600Ω at 100MHz
5164	2422 549 43062	Bead 600Ω at 100MHz
5166	2422 549 43769	Bead 30Ω at 100MHz
5170	2422 549 43769	Bead 30Ω at 100MHz
5175	2422 549 43062	Bead 600Ω at 100MHz
5180	2422 549 43062	Bead 600Ω at 100MHz
5196	2422 549 43062	Bead 600Ω at 100MHz
5197	2422 549 43769	Bead 30Ω at 100MHz
5198	2422 549 43062	Bead 600Ω at 100MHz
5199	2422 549 43062	Bead 600Ω at 100MHz
5210	2422 549 43062	Bead 600Ω at 100MHz
5214	2422 549 43062	Bead 600Ω at 100MHz
5220	2422 549 43062	Bead 600Ω at 100MHz
5221	2422 549 43062	Bead 600Ω at 100MHz
5222	2422 549 43062	Bead 600Ω at 100MHz
5223	2422 549 43062	Bead 600Ω at 100MHz
5224	2422 549 43062	Bead 600Ω at 100MHz
5228	2422 549 43062	Bead 600Ω at 100MHz
5300	2422 549 43062	Bead 600Ω at 100MHz
5302	2422 549 43062	Bead 600Ω at 100MHz
5352	2422 549 43769	Bead 30Ω at 100MHz
5520	2422 549 43062	Bead 600Ω at 100MHz
5521	2422 549 43062	Bead 600Ω at 100MHz
5522	2422 549 43062	Bead 600Ω at 100MHz
5523	2422 549 43062	Bead 600Ω at 100MHz
5524	2422 549 43062	Bead 600Ω at 100MHz
5530	2422 549 43769	Bead 30Ω at 100MHz
5541	2422 549 43062	Bead 600Ω at 100MHz
5570	3198 018 51090	10μH 10% 0603
5572	2422 549 43769	Bead 30Ω at 100MHz
5574	2422 549 43062	Bead 600Ω at 100MHz
5628	2422 549 43062	Bead 600Ω at 100MHz
5630	2422 549 43062	Bead 600Ω at 100MHz
5642	2422 549 43062	Bead 600Ω at 100MHz
5643	2422 549 43062	Bead 600Ω at 100MHz
5644	2422 549 43062	Bead 600Ω at 100MHz
5645	2422 549 43062	Bead 600Ω at 100MHz
5646	2422 549 43062	Bead 600Ω at 100MHz
5647	2422 549 43062	Bead 600Ω at 100MHz
5648	2422 549 43062	Bead 600Ω at 100MHz
5649	2422 549 43062	Bead 600Ω at 100MHz
5670	2422 549 43062	Bead 600Ω at 100MHz
5672	2422 549 43062	Bead 600Ω at 100MHz
5673	2422 549 43062	Bead 600Ω at 100MHz
5796	2422 549 43062	Bead 600Ω at 100MHz
5798	2422 549 43062	Bead 600Ω at 100MHz
5810	2422 549 43062	Bead 600Ω at 100MHz
5820	2422 549 43062	Bead 600Ω at 100MHz
5822	2422 549 43769	Bead 30Ω at 100MHz
5834	2422 549 43769	Bead 30Ω at 100MHz
5870	2422 549 43769	Bead 30Ω at 100MHz

			6821	4822 130 11422	PLVA2650A	7500	9322 157 20668	MSM51V18165F-60J
						7506	9322 168 18668	Software (check Prod. Surv.)
6001	9340 548 71115	SM PDZ33B				7510	9352 499 60118	74LVC00AD
6007	9322 149 96685	BZX384-C2V4	7000	3198 010 42310	BC847BW	7515	3198 010 42310	BC847BW
6010	9340 548 71115	SM PDZ33B	7001	3198 010 42310	BC847BW	7516	3198 010 42320	BC857BW
6019	9322 149 96685	BZX384-C2V4	7002	3198 010 42310	BC847BW	7517	9322 158 67685	ADM810TART
6022	4822 130 10654	BAT254	7006	3198 010 42310	BC847BW	7530	4822 209 90188	PCF8591T
6034	4822 130 10654	BAT254	7007	5322 209 11598	PC74HCT4538T	7540	5322 209 33172	PCF8574AT
6071	9340 548 71115	SM PDZ33B	7009	9337 153 10118	74HCT4052D	7550	5322 209 11598	PC74HCT4538T
6076	9340 548 71115	SM PDZ33B	7010	3198 010 42310	BC847BW	7555	5322 209 11598	PC74HCT4538T
6091	9340 548 71115	SM PDZ33B	7025	4822 209 30732	LM319D	7563	3198 010 42310	BC847BW
6105	9322 149 96685	BZX384-C2V4	7040	4822 209 60767	LM1881M	7570	9322 137 99668	FS6377-01
6166	9322 149 96685	BZX384-C2V4	7041	3198 010 42310	BC847BW	7571	5322 209 11598	PC74HCT4538T
6200	4822 130 10328	BAV99W	7060	3198 010 42310	BC847BW	7574	9352 317 00118	74LVC125AD
6201	4822 130 10328	BAV99W	7065	3198 010 42310	BC847BW	7580	9322 156 81668	M24C32-WMN6TNKSA
6202	4822 130 10328	BAV99W	7074	3198 010 42310	BC847BW	7605	9322 158 73671	PW164-10R
6203	4822 130 10328	BAV99W	7075	3198 010 42320	BC857BW	7628	9322 164 75682	CY62126BVLL-70ZI
6204	4822 130 10328	BAV99W	7079	3198 010 42310	BC847BW	7630	9322 168 18668	Software (check Prod. Surv.)
6205	4822 130 10328	BAV99W	7080	3198 010 42320	BC857BW	7640	4822 209 16406	TL431ACD
6206	4822 130 10328	BAV99W	7084	3198 010 42310	BC847BW	7641	9322 157 95668	STD16NE06L
6207	4822 130 10328	BAV99W	7085	3198 010 42320	BC857BW	7655	9322 141 53682	EPC2LC20
6208	4822 130 10328	BAV99W	7088	9322 145 66668	TSH93ID	7656	9322 165 40671	Software (check Prod. Surv.)
6209	4822 130 10328	BAV99W	7089	4822 209 60792	74HC4053D	7656	9322 186 23671	EP1K50FC256-3
6210	4822 130 83757	BAS216	7090	9322 145 66668	TSH93ID	7670	9322 159 45668	DS90C385MTD
6214	4822 130 83757	BAS216	7100	4822 209 60792	74HC4053D	7675	9340 560 36235	BSH111
6274	9340 548 71115	SM PDZ33B	7102	3198 010 42310	BC847BW	7676	9340 560 36235	BSH111
6276	9340 548 71115	SM PDZ33B	7103	3198 010 42310	BC847BW	7714	4822 209 30095	LM833D
6277	9340 548 71115	SM PDZ33B	7104	3198 010 42310	BC847BW	7718	3198 010 42310	BC847BW
6278	9340 548 71115	SM PDZ33B	7105	3198 010 42310	BC847BW	7734	4822 209 30095	LM833D
6302	4822 130 10654	BAT254	7107	4822 209 73852	PMBT2369	7754	4822 209 30095	LM833D
6310	4822 130 10654	BAT254	7110	3198 010 42310	BC847BW	7798	9322 116 87668	TEA6422D
6311	4822 130 10654	BAT254	7111	3198 010 42310	BC847BW	7800	4822 209 60792	74HC4053D
6315	9340 548 71115	SM PDZ33B	7112	3198 010 42310	BC847BW	7801	3198 010 42310	BC847BW
6316	9340 548 71115	SM PDZ33B	7113	3198 010 42310	BC847BW	7802	3198 010 42310	BC847BW
6317	9340 548 71115	SM PDZ33B	7115	4822 209 73852	PMBT2369	7803	3198 010 42320	BC857BW
6318	9340 548 71115	SM PDZ33B	7117	3198 010 42310	BC847BW	7805	9340 547 13215	BSH103
6319	9340 548 71115	SM PDZ33B	7121	3198 010 42310	BC847BW	7806	9340 547 13215	BSH103
6320	9340 548 71115	SM PDZ33B	7129	9340 217 80115	BC847CW	7807	9340 547 13215	BSH103
6321	9340 548 71115	SM PDZ33B	7130	9340 217 80115	BC847CW	7808	9340 547 13215	BSH103
6322	9340 548 71115	SM PDZ33B	7131	9340 217 80115	BC847CW	7812	9322 167 63668	MSP3415G-QG-B8
6323	9340 548 71115	SM PDZ33B	7135	3198 010 42310	BC847BW	7812	9322 186 87668	SP3415G-QG-B8V3
6324	9340 548 71115	SM PDZ33B	7138	3198 010 42310	BC847BW	7841	4822 209 30095	LM833D
6354	9340 548 71115	SM PDZ33B	7141	3198 010 42310	BC847BW	7851	4822 209 30095	LM833D
6355	9340 548 71115	SM PDZ33B	7145	3198 010 42310	BC847BW	7861	9322 173 77668	TS462CD
6356	9340 548 71115	SM PDZ33B	7146	9337 153 10118	74HCT4052D	7870	9322 167 76668	TC74HC590AF
6357	9340 548 71115	SM PDZ33B	7148	3198 010 42310	BC847BW	7874	9322 167 76668	TC74HC590AF
6365	9322 129 38685	BZM55-C6V8	7151	3198 010 42310	BC847BW	7879	3198 010 42310	BC847BW
6366	4822 130 10654	BAT254	7154	3198 010 42310	BC847BW	7880	9322 153 66668	CY7C199-15ZC
6378	4822 130 83757	BAS216	7157	3198 010 42310	BC847BW	7881	9351 869 80118	74HCT573DB
6380	4822 130 10654	BAT254	7158	9337 153 10118	74HCT4052D	7882	9351 869 80118	74HCT573DB
6381	4822 130 10654	BAT254	7160	3198 010 42310	BC847BW			
6388	4822 130 11422	PLVA2650A	7165	3198 010 42310	BC847BW			
6393	4822 130 11422	PLVA2650A	7170	9322 160 96671	AD9887KS-140			
6399	4822 130 11422	PLVA2650A	7175	4822 209 17398	LD1117DT33			
6503	9322 149 96685	BZX384-C2V4	7215	9322 046 99668	ST24FC21M6			
6507	4822 130 10654	BAT254	7225	9352 673 95518	SAA7118E/V1			
6508	4822 130 10654	BAT254	7280	9322 158 95668	SDA9400			
6509	4822 130 10654	BAT254	7303	4822 209 30212	PC74HCT125T			
6551	4822 130 10328	BAV99W	7305	3198 010 42310	BC847BW			
6552	4822 130 10328	BAV99W	7306	3198 010 42310	BC847BW			
6553	4822 130 10328	BAV99W	7307	3198 010 42310	BC847BW			
6554	4822 130 10328	BAV99W	7308	3198 010 42310	BC847BW			
6555	4822 130 10328	BAV99W	7309	3198 010 42310	BC847BW			
6630	4822 130 10654	BAT254	7310	3198 010 42310	BC847BW			
6710	9340 548 71115	SM PDZ33B	7311	9322 145 66668	TSH93ID			
6711	9340 548 71115	SM PDZ33B	7315	3198 010 42310	BC847BW			
6720	9340 548 71115	SM PDZ33B	7316	3198 010 42310	BC847BW			
6721	9340 548 71115	SM PDZ33B	7318	3198 010 42310	BC847BW			
6730	9340 548 71115	SM PDZ33B	7319	3198 010 42310	BC847BW			
6731	9340 548 71115	SM PDZ33B	7320	3198 010 42310	BC847BW			
6740	9340 548 71115	SM PDZ33B	7321	3198 010 42310	BC847BW			
6741	9340 548 71115	SM PDZ33B	7322	3198 010 42310	BC847BW			
6750	9340 548 71115	SM PDZ33B	7323	3198 010 42310	BC847BW			
6751	9340 548 71115	SM PDZ33B	7325	3198 010 42310	BC847BW			
6760	9340 548 71115	SM PDZ33B	7326	3198 010 42310	BC847BW			
6761	9340 548 71115	SM PDZ33B	7328	3198 010 42310	BC847BW			
6770	9340 548 71115	SM PDZ33B	7333	3198 010 42310	BC847BW			
6771	9340 548 71115	SM PDZ33B	7340	9337 153 10118	74HCT4052D			
6774	9340 548 71115	SM PDZ33B	7352	9322 160 17668	ST202ECD			
6775	9340 548 71115	SM PDZ33B	7356	3198 010 42310	BC847BW			
6778	9340 548 71115	SM PDZ33B	7357	3198 010 42310	BC847BW			
6779	9340 548 71115	SM PDZ33B	7358	3198 010 42310	BC847BW			
6782	9340 548 71115	SM PDZ33B	7364	4822 130 61553	DTC124EU			
6783	9340 548 71115	SM PDZ33B	7365	3198 010 42310	BC847BW			
6786	9340 548 71115	SM PDZ33B	7366	3198 010 42310	BC847BW			
6787	9340 548 71115	SM PDZ33B	7367	3198 010 42310	BC847BW			
6790	9340 548 71115	SM PDZ33B	7370	4822 209 71585	74HCT4538N			
6791	9340 548 71115	SM PDZ33B	7383	9352 684 81557	SAA5801H/015			
6802	9340 260 20115	BAW56W	7405	3198 010 42310	BC847BW			
6805	9340 260 20115	BAW56W	7406	3198 010 42310	BC847BW			
6807	9340 260 20115	BAW56W	7430	9322 156 81668	M24C32-WMN6TNKSA			
6820	4822 130 10654	BAT254	7435	3198 010 42310	BC847BW			

VGA Connector Panel [VGA]		
Various		
0318	2422 025 17183	Connector 32p f
0371	2422 025 17027	Connector 15p F
0371	4822 267 51477	Socket 15p f
0372	2422 025 17027	Connector 15p F
0372	4822 267 51477	Socket 15p f
0374	2422 026 05276	Socket 1p f or
0604	3122 357 00301	Software (check Prod. Surv.)
0605	3122 357 00311	Software (check Prod. Surv.)
— —		
2901	2238 586 59812	100nF 20-80% 50V 0603
2902	2238 586 59812	100nF 20-80% 50V 0603
2909	2238 586 59812	100nF 20-80% 50V 0603
2910	2238 586 59812	100nF 20-80% 50V 0603
2925	2020 552 94427	100pF 5% 50v 0603
-WW-		
3900	4822 051 30331	330Ω 5% 0.062W
3901	4822 051 30331	330Ω 5% 0.062W
3902	4822 051 30331	330Ω 5% 0.062W
3903	4822 051 30101	100Ω 5% 0.062W
3904	4822 051 30103	10kΩ 5% 0.062W
3905	4822 051 30103	10kΩ 5% 0.062W
3906	4822 051 30101	100Ω 5% 0.062W
3907	4822 051 30101	100Ω 5% 0.062W
3908	4822 051 30101	100Ω 5% 0.062W
3909	4822 051 30101	100Ω 5% 0.062W
3910	4822 051 30103	10kΩ 5% 0.062W
3911	4822 051 30101	100Ω 5% 0.062W

3912	4822 051 30102	1k Ω 5% 0.062W
3913	4822 051 30101	100 Ω 5% 0.062W
3914	4822 051 30102	1k Ω 5% 0.062W
3915	4822 051 30101	100 Ω 5% 0.062W
3916	4822 051 30101	100 Ω 5% 0.062W
3917	4822 051 30103	10k Ω 5% 0.062W
3918	4822 051 30103	10k Ω 5% 0.062W
3919	4822 051 30101	100 Ω 5% 0.062W
3920	4822 051 30101	100 Ω 5% 0.062W
3921	4822 051 30103	10k Ω 5% 0.062W
3922	4822 051 30101	100 Ω 5% 0.062W
3923	4822 051 30102	1k Ω 5% 0.062W
3924	4822 051 30101	100 Ω 5% 0.062W
3925	4822 051 30102	1k Ω 5% 0.062W
3926	4822 051 30101	100 Ω 5% 0.062W
3927	4822 051 30472	4.7k Ω 5% 0.062W
3929	4822 051 30472	4.7k Ω 5% 0.062W
3930	4822 051 30472	4.7k Ω 5% 0.062W
3934	4822 051 30103	10k Ω 5% 0.062W
3935	4822 051 30333	33k Ω 5% 0.062W
3999	4822 051 30152	1.5k Ω 5% 0.062W



5900	2422 549 43062	Bead 600 Ω at 100MHz
5901	2422 549 43062	Bead 600 Ω at 100MHz



6900	9322 149 10685	BZM55-C33
6901	9322 149 10685	BZM55-C33
6902	9322 149 10685	BZM55-C33
6903	9322 149 10685	BZM55-C33
6904	4822 130 10654	BAT254
6905	4822 130 10654	BAT254
6906	9322 149 10685	BZM55-C33
6907	9322 149 10685	BZM55-C33
6908	9322 149 10685	BZM55-C33
6909	9322 149 10685	BZM55-C33
6910	9322 149 10685	BZM55-C33
6911	9322 149 10685	BZM55-C33
6912	9322 149 10685	BZM55-C33
6913	9322 149 10685	BZM55-C33
6914	9322 149 10685	BZM55-C33
6915	9322 149 10685	BZM55-C33
6916	4822 130 10654	BAT254
6918	9322 149 10685	BZM55-C33
6920	9322 149 10685	BZM55-C33
6921	9322 149 10685	BZM55-C33
6922	9322 149 10685	BZM55-C33
6923	9322 149 10685	BZM55-C33
6925	9322 149 10685	BZM55-C33



7900	5322 209 71568	PC74HCT14T
7904	9322 046 99668	ST24FC21M6
7907	9322 046 99668	ST24FC21M6
7910	4822 209 30212	PC74HCT125T
7915	3198 010 42310	BC847BW